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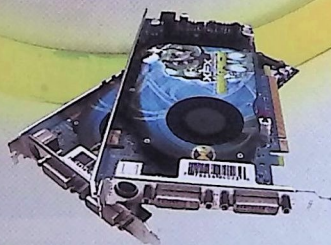
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Editorial



The Electronic Entertainment Expo (E3) is upon us.

The biggest trade show for the video game industry and the various beggars and hangers on (yours truly included) head down to LA to put all the games, consoles, peripherals and assorted cell phone handsets to the test. It's heavy punishment on the thumbs, the eyes and the ears, to make no mention of the brain and liver.

Short of in-depth comparative research, an industry trade show is as good a litmus test for the state of said industry as you can find. And as trade shows go, E3 is big, loud, bright and expensive. It's an outward manifestation of an already booming industry, and one that's expected to continue growing.

In high tech and entertainment, there's always one area that's doing well while others seem to lag behind. By way of example, DVDs and the industries that surround them, the filming, their manufacture, the distribution channels and so on are making a good go of it while traditional music sales at retail continue to slump and the industries that surround them are forced to look elsewhere. Paid music downloads are said to be reviving the single, but at \$1 a piece and with often too little reason to purchase the rest of the album, they've far from filled the gap left by CD sales at retail.

Similarly, the booming trade in computers and com-

puter hardware has tapered off, coming in line with the appliances and other consumer commodities they have a lot in common with.

Those who attended Comdex, the once go-to computer show in the early to mid nineties can attest to the fact that the show and the industries it represented were booming. Tech companies, if the grizzled journalists are to be believed, threw elaborate parties and spent hundreds of thousands of dollars or even more wowing the crowds at the annual show.

Now Comdex is dead, replaced in part by a bunch of lesser computer-centric shows. Those involved in the boom times have since moved on to the Consumer Electronics Show (CES, in Las Vegas in January), TechXNY and various others.

E3, whose roots can be traced to Comdex – in an out of the way hall at Comdex to be exact, according to Doug Lowenstein, president of the Interactive Digital Software Association (IDSA), the group that puts on E3 – outstripped its parent show and has outlived it. The booths themselves, while they're only three-day structures, cost in the millions to erect.

How long will the show and the industry it represents continue to boom? Only time will tell.

With manufacturers gearing up for the next generation of game systems though, all that remains to be seen is how much gamers are buying.

**Enjoy the issue,
Andrew Moore-Crispin
Editor-in-Chief**

Letter of the Month

Last month we asked: Which is better, console, PC or handheld gaming? Our Letter of the Month comes from Christopher Campbell who writes:

With some grey-market modifications, the Xbox's PC architecture can be fully explored, turning it into an all-singing, all-dancing media server.

I believe that once the PSP reaches the same level, it will become the ultimate handheld. With such a brilliant screen, WiFi, and Memory stick media interfaces, the potential is astounding.

What the manufacturers need to realize is that if they're not astute enough to explore the potential of their hardware, there are plenty of indie programmers out there who are more than happy to do it for them and release the results to the public.

For his letter, Christopher wins a retail copy of McAfee Internet Security Suite 2005. Congratulations Christopher.

This month, in addition to general feedback on the issue, we're asking for your thoughts on our question of the month: What digital camera features are most important to you? Whatever your opinion, we want to hear from you. Send your thoughts to:

letters@ppublishing.ca

The letter chosen as Letter of the Month will win a Jolt messenger style laptop carrying bag. With front compartments for pens and a cell phone, the Jolt will also carry up to a 12-inch notebook. It's comfortable to carry thanks to a large, wide and padded shoulder strap constructed of breathable mesh.



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Test lab: PC video cards

A PC gamer's video card is his or her single most important piece of computer hardware. Controlling every pixel displayed on your screen, video cards not only make or break your gaming experience, but are also usually the single most expensive component inside your PC.

As graphics cards have evolved over the last few years, bandwidth and power have become ever increasing factors in graphics card development. Simply put, each new generation of graphics cards takes up more bandwidth and more power than its predecessor. Because of power and bandwidth concerns, last year the industry started a transition to PCI Express, a new architecture that offers more power and double the I/O bandwidth of AGP BX.

With AGP BX now nearing redundancy, we'll be taking a closer look at six new PCI Express 16X graphics cards.

However, before we start it is important to note how these cards are differentiated from one another, since clock speeds and memory sizes are not the only features consumers should look for when purchasing new graphics cards. I'm referring to pixel pipelines, the parallel paths inside your GPU that render pixels every clock cycle. The more pixel pipelines your GPU has, the more pixels it can render, and therefore, the faster it is. Early graphics cards started with one pixel pipeline, and now modern high-end cards feature 16.



XFX GeForce 6800GT in SLI

XFX GeForce 6800GT in SLI

PCI Express not only brought increased bandwidth and power to graphics cards, but also the ability to run them in parallel, with two graphics cards in one system. NVIDIA dubbed its version of this technology "SLI" and has been very successful marketing it, shipping more than 750,000 SLI-ready motherboards. The technology works by splitting up a game's rendering work into two graphics cards, theoretically almost doubling the performance. In our tests, however, we got around 40 per cent more, with the greatest performance increases at high resolutions where more rendering power is needed.

Playing games with the XFX GeForce 6800GT cards in SLI is phenomenal. Games never slow down and can finally be played at high resolutions at their ultimate quality settings.

Since the 6800GT in SLI gives around 40 per cent more performance than in single-card mode, the performance-to-price ratio of the XFX GeForce 6800GT in SLI is far lower than the BFG GeForce 6800GT OC, and is the lowest among the six graphics cards reviewed.

In order to keep prices down, XFX opted to exclude any bundled games or extras with their GeForce 6800GT cards, only including the necessary output cables and DVI adapters.

It is also the fastest graphics card setup widely available today, and if you're looking for the fastest, get ready to pay for it. Even though the XFX GeForce 6800GT cards are some of the cheapest 6800GT currently available on the market, the two cards and an SLI-ready motherboard will cost you around \$1000.

Visiontek Radeon X850XT

The Visiontek Radeon X850XT is the most expensive card in our roundup, and is also the only card with a two-slot cooling solution, taking up two PCI slots on the motherboard. The card features 16 pixel pipelines like the GeForce 6800GT, and is the fastest widely-available

No anti-aliasing (AA) / anisotropic filtering (AF)

	Price	Doom 3		Far Cry		Half-Life 2		Chronicles of Riddick	
		1024	1600	1024	1600	1024	1600	1024	1600
XFX GeForce 6800GT in SLI	\$725	95.6	75.1	96.4	95.2	116.9	115.4	103.8	80.4
Visiontek Radeon X850XT	\$440	78.6	45.4	93.4	85.4	118.7	111.7	88.6	43.7
BFG GeForce 6800GT OC	\$380	91.4	59.9	85.9	74.6	107.6	97.4	98.4	52.4
Sapphire X800XL Ultimate Edition	\$350	65.8	41.3	90.2	79.9	114.2	106.9	78.1	37.7
XFX GeForce 6600GT	\$175	63.6	39.5	74.6	51.6	86.3	69.1	60.8	27.6
ATI Radeon X700 Pro	\$160	38.9	16.8	76.8	42.7	91.8	76.5	44.6	17.8

ATI card currently on the market.

The Visiontek Radeon X850XT comes with a bundle similar to that of the XFX GeForce 6800GT cards, pretty much just including the necessities with no important extras.

The card outperformed the BFG GeForce 6800GT in our Far Cry and Half-Life 2 tests, but fell behind in our Doom 3 and Chronicles of Riddick benchmarks.

The Visiontek Radeon X850XT's largest downfall is its excessive price, around 15 per cent higher than the BFG GeForce 6800GT OC. Because of its high price, the card's performance-to-price ratio is lower than that of the BFG card, making the Visiontek Radeon X850XT a tough sell to anyone outside ATI's Markham, Ont. headquarters.

BFG GeForce 6800 GT OC

BFG is a company that was founded by former Visiontek executives, so it is only fitting that we'd be comparing the two companies' high-end PCI Express graphics cards with each another.

The BFG GeForce 6800GT OC, as its name implies, comes overclocked right out of the box. Equipped with a custom copper heatsink LED fan that adjusts speeds to temperature settings, the BFG GeForce 6800GT has a core clock speed 20MHz higher than the XFX GeForce 6800GT.

However, like the XFX GeForce 6800GT, the BFG GeForce 6800GT OC has a weak bundle and fails to include any games in the package.

Like all other GeForce 6800GT PCI Express cards, the BFG GeForce

BFG GeForce 6800 GT OC



Sapphire Radeon X800XL Ultimate Edition



6800GT OC is able to run in an SLI configuration, so if down the road you feel like one card isn't offering the performance you're looking for, you have the ability to buy another and put it into an nForce 4 SLI motherboard. This will give you around 40 per cent more performance, similar to what we saw with the XFX GeForce 6800GT cards in SLI.

The BFG uniquely offers warranty and support features. You get a lifetime warranty and round the clock tech support in the US and Canada, so someone will always be there to help you through any problems you encounter. Needless to say, BFG has the best graphics card warranty and support operation in North America.

From a performance standpoint, the card ran well against its Visiontek Radeon X850XT counterpart, performing faster in Doom 3 and Chronicles of Riddick tests while the Visiontek Radeon X850XT took our Half-Life 2 and Far Cry benchmarks. However, because of the significant price difference between the two, the BFG GeForce 6800GT OC provides a better overall value, evident by its higher performance-to-price ratio.

Sapphire Radeon X800XL Ultimate Edition

Sapphire is one of the few graphics card companies that actively pursues gamers not interested in reference design graphics cards.

The Sapphire Radeon X800XL Ultimate Edition is the latest instalment of Sapphire's Ultimate Edition line, and is the company's most impressive card to date. In addition to the included overclocking utility and near-silent cooling, the Sapphire X800XL Ultimate Edition is bundled

4X anti-aliasing (AA) / 16X anisotropic filtering (AF)

Testbench system specs

Half-Life 2		Far Cry		Performance-to-price ratio (overall performance / price)
1024	1600	1024	1600	
116.7	91.9	92.6	78.1	1.60
114.7	69.5	87.6	58.4	2.26
101.9	74.7	78.4	41.4	2.54
111.3	66.3	85.2	51.1	2.65
76.4	33.2	47	22.9	3.73
75.3	34.1	45.4	21.4	3.64

AMD Athlon 64 4000+
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Drivers used: NVIDIA ForceWare 71.89 for NVIDIA cards and ATI Catalyst 5.4 for ATI cards.

with full versions of Prince of Persia: Sands of Time and Splinter Cell: Pandora Tomorrow.

The card's heatsink fan is made by Zalman and is very quiet -- much quieter than that of the Visiontek Radeon X850XT and BFG GeForce 6800GT OC. Sapphire also includes RAM sinks with the card, as the X800XLs memory clock speeds are actually 100MHz higher than stock Radeon X800XL frequencies.

Like the Visiontek Radeon X850XT, the Sapphire Radeon X800XL Ultimate Edition features Video-In / Video-Out (VIVO) capability, which allows you to capture and edit your analog home videos.

All of these extras would have no bearing if the card did not perform well, but thanks to the 16 pixel-pipeline Radeon X800XL GPU, the Sapphire Radeon X800XL Ultimate Edition keeps up with both the BFG GeForce 6800GT OC and the Visiontek Radeon X850XT. In fact, in our Far Cry and Half-Life 2 tests, the Sapphire Radeon X800XL Ultimate Edition was faster than the BFG GeForce 6800GT OC.

The Sapphire Radeon X800XL Ultimate Edition is also the cheapest 16 pixel-pipeline featured in the roundup, and when its price is combined with the excellent all-around performance we saw in our tests, we see a higher performance-to-price ratio than that of the BFG GeForce 6800GT OC and the Visiontek Radeon X850XT.

XFX GeForce 6600GT

The NVIDIA GeForce 6600GT is arguably the most popular mainstream gaming GPU on the market today, and by looking at how the XFX version of this card stacks up to the ATI Radeon X700 Pro, it is easy to see why. In short, the eight-pixel-pipeline-based XFX GeForce 6600GT outperformed the ATI Radeon X700 Pro in everything but Half-Life 2, and even the Half-Life 2 tests were very close. The card's Doom 3 performance even rivalled that of the Sapphire Radeon X800XL Ultimate Edition, a card double its price!

The XFX GeForce 6600GT's compelling price and excellent performance give it the highest performance-to-price ratio of all the cards tested -- a ratio that is more than double that of the XFX GeForce 6800GT in SLI.

Not only does the card offer great performance at a moderate price point, it also includes three full version games. X2: The Threat, Commandos 3: Destination Berlin, and Moto GP.

All that, combined with the XFX GeForce 6600GT's future upgradeability through SLI, make the card an irresistible product to a gamer on a budget.

ATI Radeon X700 Pro

ATI's Radeon X700 Pro is an eight-pixel-pipeline graphics card designed for the mainstream market. It is the only ATI card featured in this roundup built and sold by ATI, but nevertheless it's second rate when compared to the XFX GeForce 6600GT.

Simply put, the only game the Radeon X700 Pro had an advantage in was Half-Life 2, but even there, the card only performed about five per cent faster than the XFX GeForce 6600GT.

The ATI Radeon X700 Pro bundle is a standard affair, much like that of the XFX GeForce 6800GT and Visiontek Radeon X850XT, with just the standard cables, adapters and manuals one would expect with a new graphics card.

Even though the Radeon X700 Pro is cheaper than the XFX GeForce 6600GT, the XFX card offers a higher performance-to-price ratio due to its commanding performance lead over the Radeon X700 Pro.

Conclusion

After all is said and done, it is easy to pinpoint the two sweet spots in our roundup: the Sapphire Radeon X800XL Ultimate Edition and the XFX GeForce 6600GT. The Sapphire Radeon X800XL Ultimate Edition really is the "ultimate" high-end graphics card to own, combining a solid bundle, excellent performance and nearly silent operation all in one package. Sapphire truly found the perfect GPU for the latest instalment of its Ultimate Edition franchise.

The XFX GeForce 6600GT is on equally good footing, but in the mainstream markets. Like Sapphire, the XFX is bringing an excellent bundle to the table, including three full version games. However, the most impressive feature of the XFX GeForce 6600GT is its overall performance -- it towers over the Radeon X700 Pro in all but one benchmark. The XFX GeForce 6600GT is definitely the best GPU for the mainstream markets.

By Paul Jastrzebski



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Digital Photography Tutorial 16

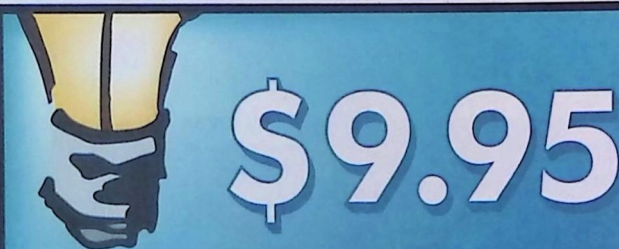
Restoring Photos Part 1: scanning tips

Affordable scanners and image editors allow anyone to tackle photo restoration. Restoring can be as straightforward as bringing back the colours in a 20-year old snapshot that's faded, but it can also involve major reconstruction of a photo damaged by creases and stains.

Since it's usually a print that needs restoring, the first step is to convert it to digital form. You can use a copy stand and photograph the print with a digital camera, but scanning is the more common way. Some all-in-one printers include a sheet-fed scanner you can use, but a flatbed scanner is a must for fragile originals that can be damaged by the rollers of a sheet-fed scanner.

A scanner setting of 300 pixels per inch is all that you need. Why 300 pixels per inch? Scanning at higher resolutions will create more pixels, but you won't likely get any more image detail, so the file will be bigger but not better [scanning negatives or slides is another matter]. Some scanner software will limit the range of tones to be captured. If you can adjust this setting, make sure it is capturing the full tonal range, from 0 to 255. If your photograph has a border, include it in the scan. One of the corrections you will make is white balance, and the border can be used as a target. When saving the scan, choose an uncompressed image format such as TIFF.

If you have the option to choose your colour space, select RGB, which creates all colours from three primaries – red, green and blue. The scanner might also let you choose the colour depth. For colour photographs use 8-bit colour, sometimes



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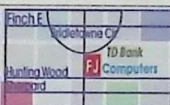
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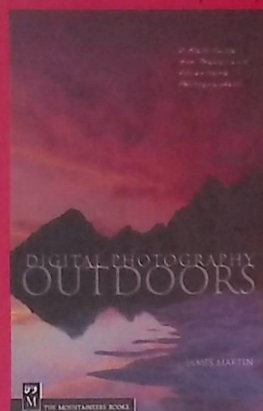
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referred to as 24-bit colour (eight bits for each of the red, green and blue colours = 24 bits). An 8-bit number can be one of 256 values (2 to the power of 8 = 256), so 8-bit colour will yield approximately 16.7 million separate shades (256 red values x 256 green values x 256 blue values), which is enough to produce photorealistic colour. Higher colour depths such as 16-bit colour (also called 48-bit colour) offer some advantages, but not all image editors support 16-bit mode, so the point may be moot. Black and white prints are normally saved as greyscales, but there are times – if a photo has a sepia tint you want to preserve, for example – when RGB might give better results.

Open the image you've scanned in an image editor and access the histogram tool, which graphically shows the distribution of values in your image. There is no ideal shape, but there are a few danger signs to look for. A histogram that starts or ends high on the vertical axis, or has a large flat section on the leading or trailing edge indicates exposure problems, so you'll need to change some settings on your scanner and try again.

In the next instalment, we'll look at basic colour and tonal corrections. After that, we'll turn to some techniques to heal damaged photos.

By David Tanaka

[illegible]

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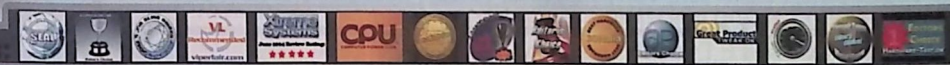
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Alienware Aurora: Star Wars Edition

During the licensing frenzy surrounding the release of Star Wars:

Episode III – Revenge of the Sith, Alienware snapped up the rights to make the first officially licensed Star Wars PCs. The resulting Aurora: Star Wars Edition machines

sport cases with beautifully painted montages of characters from the films, and custom wallpaper and desktop skins with either a Light Side or Dark Side theme depending on your relationship with the Force. All machines come bundled with a free membership to the official online Star Wars fan club as well as Star Wars Video Journey samples including music from the soundtrack.

The machines include an AMD Athlon 64 FX-55 Processor, 1024MB Dual-Channel RAM, 80GB hard drive and Windows XP. Pricing is still to be determined, but don't expect them to be cheap. For further details and a complete list of specs, visit www.alienware.com.



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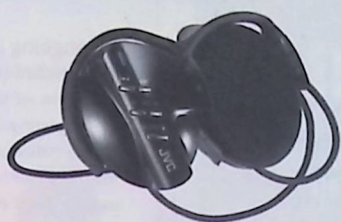
JVC XA-A50CL ear clip audio player

At CES in Las Vegas in January of this year, JVC announced and displayed its digital audio player integrated into a pair of ear clip headphones.

Now, the company is announcing that the product is on its way to store shelves.

With 128MB of storage space [approx. 30 MP3 or 60 WMV files] users will likely find they need to refresh their playlists often.

As the ear clip headphone player has no display [nor would it make sense to add one] the



device uses JVC's Voice Guidance system, where users navigate menus using audio prompts as guidance. Prompts are available in three languages, the company says.

The device offers 20 hours of play from a single AAA battery according to the company.

While the product name hardly rolls off the tongue, the JVC XA-A50CL retails for a suggested US\$164.85 [about \$205].

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DV, or Not DV

An ongoing look at digital video tips, tools and techniques

Last time we talked about the value of analog video, especially the long-term preservation of videotape.

In the middle of a move to the all-digital, all-the-time world, this may have caused some confusion. The aesthetics of analog aside, today's digital video (including the popular Mini-DV format) can also be stored on magnetic tape inside a plastic cassette. So yes, the tips we shared for long-term storage of yesterday's videotapes (like VHS or Hi-8) do apply to DV.

And yes, as readers pointed out, digital video is also stored on much different media, like smart cards, optical discs and hard drives – all of which bring their own long-term storage issues.

The market may promise ten or twenty or more years of life expectancy for optical discs, but tests suggest that the reality may be half that.

It's the old "you get what you pay for" adage; leading edge technology is no exception. Here's what the U.S. National Institute of Standards and Technology says about media buyers being wary:

"Results show that the effects of direct light exposure cannot be ignored. Depending on the media type and intensity of the light, a disc may fail due to exposure to direct sunlight in as little as a few weeks.

"Results suggest that [top quality media types] will ensure data is available for several tens of years and therefore may be suitable for archival uses. Unfortunately, it is very difficult for customers to identify these more stable media."

Optical media (light-sensitive discs created with coloured lasers tuned to certain frequencies) does have advantages for long-term data storage, such as an immunity to magnetic waves from speakers and the like. Blue light lasers are being incorporated into professional video gear by companies like Sony as a recording method for new camcorders. A single-sided 23.3GB disc costs around \$35 and records about 85 minutes of DV or 45 minutes of



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MPEG-2 quality video. However, for nonlinear editing applications, the discs do not have the fast seek time required.

Once you've figured out how to buy good quality blank discs (tips: check manufacturers' lists on media compatibility; try to avoid no-name brands; the extra protection offered by white-coated DVD-Rs is generally a bonus and lasts longer than gold - too reflective - or even

silver surfaces), treat them with care.

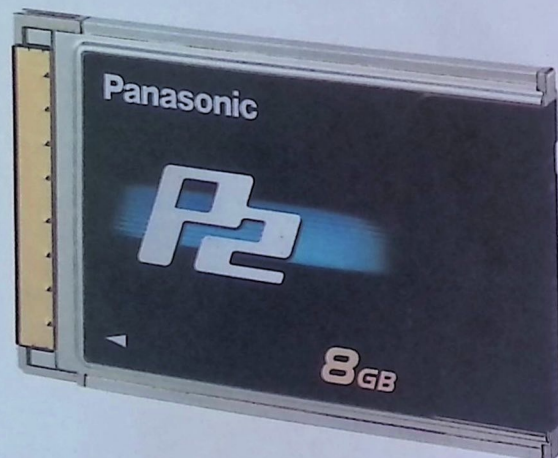
Some users joke that a bad disc just adds to their coffee cup coaster collection - but what would you do with a bad memory card?

Memory cards are the next big thing in digital video storage. Re-writable and re-usable with no moving parts, capable of handling many different formats and suitable for anything from Web streaming to high-end production, solid state memory devices also come with a big sticker price - for now.

For example, Panasonic's 8GB P2 card, used in the company's new AG-HVX200 high-definition handheld camcorder, is priced around \$1,700 even with recently announced price reductions! It stores some eight minutes of HD, or around 30 minutes of DV-quality. Don't even try to cost-compare the video storage/price ratio of cards to cassettes. As the saying goes, we're not in Kansas anymore.

The P2 can be mounted on virtually any PC with a PCMCIA slot as a regular drive, and it is fast enough for nonlinear editing. P2 transfers (640 Mbps) are higher than optical or hard drive alternatives, and the card can be used over and over without affecting quality. Panasonic says the card is less susceptible to physical damage as well, unaffected by extremes of temperature, moisture and dust.

A 128GB card should be available next year, and we can only hope the price continues to drop ... fast.



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- HD: 160GB Master DiamondMax 133
- Video: Giga Byte Radeon X300SE 128M DVI/TV out
- Monitor: Sony S93 19" LCD 1280x1024 500:1 25ms
- Optical Drive: Memorex 16x DVD+R/RW
- Audio: Onboard 6 Channel Audio
- Case: Aluminum Mid-Tower & 300W PS
- KB: Microsoft Wireless Keyboard
- Mouse: Microsoft Wireless Mouse
- Speakers: ALTEC Lansing 121 2.1 Speakers & Subwoofer (Picture not exactly as shown)
- (Optional: Operating System)

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- RAM: Kingston 512DDR PC3200
- FD: Sony 1.44M FLOPPY DRIVE 3.1/2"
- HD: 80GB Master DiamondMax 133
- Video: Onboard SIS616FX Chipset
- Monitor: LG 1750S 17" 1280x1024 550:1 12ms
- Optical Drive: LG 4052B 8x DVD+R/RW
- Audio: Onboard 6 Channel Audio
- Case: Mid-Tower (CA9 834) 400W PS
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- Mouse: Logitech B99 WheelMouse Optical
- Speakers: ALTEC Lansing 121 2.1 Speakers with Subwoofer
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- Monitor: Sony S93 19" LCD 1280x1024 500:1 25ms
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- Audio: Onboard 6 Channel Audio
- LAN: Onboard 10/100 Ethernet
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The Works I PCI Express

\$1839



Intel Pentium 4 LGA 3.0GHz 1mb cache, Asus motherboard P50C Deluxe, 1GB DDR2 533 mhz memory, Seagate 160GB 7200 rpm SATA2 drive, ATI All in Wonder X600PRO PCI-E 256mb, Viewsonic VP171B-2 17" 8ms LCD, Liteon 16x DVD Writer Dual Layer, Antec Sonata Super Quiet Case, Logitech Keyboard and Optical mouse, Altec Lansing 2.1 speakers, Windows XP Pro, Onboard 8 Channel Digital sound, Firewire, 1000 LAN, USB2, SATA, Twin RAID controllers
As listed (#Q57443) **\$1839.00**

LCD Business Package

\$769



Intel Celeron-D processor at 2.4GHz with 533MHz front side bus, Gigabyte motherboard GA8S661FXMPR with built in Video, Sound, USB 2.0, and SATA drive support, 256MB 400 Mhz DDR memory, Seagate SATA 80GB 7200 RPM hard drive, Envision 17 inch LCD monitor with 16ms response time, lower case, LG Electronics 52x CD Writer, Internet keyboard, mouse, powered speakers, Windows XP Home. Full expandable with AGP8x slot for future video options and PCI slots for future applications.
As listed (#Q55946) **\$769.00**

Economy Computer Systems

\$649



Intel 2.4GHz Celeron Processor, Gigabyte motherboard GA-8S661FXMP 256MB DDR memory, Seagate 40GB 7200 RPM, Acer 17 inch monitor, Chentrio case, LG Electronics 52x CD Writer, Internet keyboard, mouse, powered speakers, Windows XP Home, Onboard Digital sound, 10/100 LAN, USB 2.0, Video, AGP8x slot.
As listed (#Q56365) **\$649.00**
Above system without monitor or Microsoft Windows XP (#Q56367) **\$389.00**
Upgrade above packages to a Pentium 4 processor running at 2.8GHz add \$139.00

Rackmount File Servers

From **\$659**



Intel Pentium 4 LGA 3.0GHz processor 800fsb, Asus motherboard AS-P5800-VM, 512MB DDR memory, Seagate 40GB 7200 rpm drive, LG CD-ROM drive, Antec 2U or 4U Rack Mount case, Heavy duty power supply, Onboard LAN, USB2.0, Video, Built-in RAID controller for expansion, 2u Server (#Q56255) **\$649.00**
4u Server (#Q56254) **\$774.00**
Also available in a 2.8GHz Celeron version with 256mb of memory - 4u (#Q57833) **\$659.00**

Intel 1U Server

Intel Pentium 4 3.0GHz 800fsb, Intel motherboard with E7210 chipset, 100 and 1000 LAN, 1024mb DDR memory, 160GB Seagate SATA2 hard drive, Slim CD-ROM, Slim floppy drive, upgradeable to RAID 0/1 by just adding another drive. Three year manufacturer warranty (#Q57629) **\$1339.00**

LASER PRINTERS

SAMSUNG	
ML1740 (17ppm/600dpi)	234 ⁹⁵
ML2250 (22ppm/600dpi)	205 ⁹⁵
ML2251N (lan/22ppm/600dpi)	911 ⁹⁵
CLP510 (colour/20.5ppm/1200dpi)	511 ⁹⁵
HEWLETT PACKARD	
1020 (15ppm/600 dpi)	209 ⁹⁵
1022N (lan/15ppm/1200 dpi)	365 ⁹⁵
1320 (22ppm/1200 dpi)	463 ⁹⁵
1320N (lan/20ppm/1200 dpi)	594 ⁹⁵
2420 (28ppm/1200 dpi)	628 ⁹⁵
4250 (43ppm/1200 dpi)	1039 ⁹⁵
2550L (colour/20/4ppm/600dpi)	444 ⁹⁵
3500 (colour/12/4ppm/600dpi)	793 ⁹⁵
HEWLETT PACKARD Multifunction	
3015MFP (print, scan, copy, & fax)	359 ⁹⁵
3020MFP (print, scan, & copy)	476 ⁹⁵
3030MFP (print, scan, copy, & fax)	580 ⁹⁵
3380MFP (print, scan, copy, & fax)	810 ⁹⁵

MULTIFUNCTION LASER

Samsung's multifunction laser works as a scanner, fax machine, printer, and copier. Excellent quality and very easy to afford. 600x600 dpi resolution, 30 page document feeder, 16ppm printing. USB and Parallel interfaces.
SA-SCX4216F Multifunction unit **397⁹⁵**



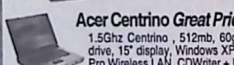
acer Notebooks



Acer AS3002WLCI-H

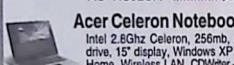
- AMD 2800 Sempron processor
- 256MB DDR memory
- Microsoft Windows XP Home
- 40gb hard drive
- CD Writer & DVD reader combo drive
- 15.4 inch WXGA display 1280x800
- 56k modem, 10/100 LAN, Wireless LAN (g)

\$862 Watch movies on the go!



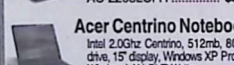
Acer Centrino Great Price!

1.5GHz Centrino, 512mb, 60gb drive, 15" display, Windows XP Pro, Wireless LAN, CDWriter & DVD AC-4150LCI-P **\$1250.95**



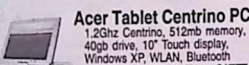
Acer Centrino Notebook

Intel 2.6GHz Celeron, 256mb, 40gb drive, 15" display, Windows XP Home, Wireless LAN, CDWriter & DVD AC-2203LCI-H **\$899.95**



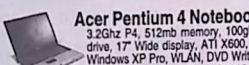
Acer Centrino Notebook

Intel 2.0GHz Centrino, 512mb, 60gb drive, 15" display, Windows XP Pro, Wireless LAN, DVD Writer AC-4654LCI-P **\$1639.95**



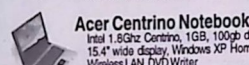
Acer Tablet Centrino PC

1.3GHz Centrino, 512mb memory, 40gb drive, 10" Touch display, Windows XP, WLAN, Bluetooth AC-TMC1131T-XPT **\$1757.95**



Acer Pentium 4 Notebook

3.2GHz P4, 512mb memory, 100gb drive, 17" Wide display, ATI X600, Windows XP Pro, WLAN, DVD Writer AC-AS1804WMSI-P **\$2118.95**



Acer Centrino Notebook

Intel 1.6GHz Centrino, 1GB, 100gb drive, 15.4" wide display, Windows XP Home, Wireless LAN, DVD Writer AC-AS1684WLMH-H **\$1678.95**

INKJET PRINTERS

Print Directly on DVD's

- Prints onto printable
- DVD/DVD media
- Prints borderless photos
- Individual ink tanks

\$129⁹⁵



EPSON Inkjets

R320 Photo/DVD/CD Printer	217 ⁹⁵
R830 Photo/DVD/CD Printer	454 ⁹⁵
R1800 Photo/DVD/CD Printer	636 ⁹⁵
R2400 Photo/DVD/CD Printer	878 ⁹⁵
4000 Pro Print Engine	2185 ⁹⁵
4800 Pro Print Engine	2283 ⁹⁵
HEWLETT PACKARD All-In-One	
4215MFP Print/Scan/Copy/Fax	158 ⁹⁵
4110MFP Print/Scan/Copy/Fax	157 ⁹⁵
5510MFP Print/Scan/Copy/Fax	191 ⁹⁵

NETWORK STORAGE

Convert your USB hard drives into Network Servers

Dlink's new network storage adapter lets you easily share your files over a network or even the internet. Uses external USB hard drives.

DNS-120 Network storage adapter **112⁹⁵**

POCKET PC'S

HEWLETT PACKARD	
lpaq 1710 (603mhz, 25mb)	281 ⁹⁵
lpaq 2750 (634mhz, 128mb, Blue/WiFi)	606 ⁹⁵
lpaq 3115 (300mhz, 52mb, Blue/WiFi)	393 ⁹⁵
lpaq 4350 (400mhz, 64mb, Blue/WiFi)	585 ⁹⁵
lpaq 4700 (624mhz, 192mb, Blue/WiFi)	639 ⁹⁵
lpaq 4700 GPS Kit	
(lpaq 4700 VGA, Bluetooth GPS receiver, charger, and Canadian & US maps)	989 ⁹⁵
lpaq 6320 (75mb, Phone/Blue/WiFi)	669 ⁹⁵
lpaq GPS Bluetooth mapping add-on	361 ⁹⁵
lpaq Keyboard Folding Bluetooth	127 ⁹⁵

ASUS
A730 (533mhz, 64mb, 640x480 colour, Blue) **609⁹⁵**
A730W (533mhz, 64mb, 640x480 Blue/WiFi) **728⁹⁵**

PALM COMPUTING

Zire 21 (126mhz, 8mb, Black & White)	123 ⁹⁵
Zire 31 (200mhz, 16mb, Colour)	178 ⁹⁵
Zire 72 (312mhz, 24mb, Colour)	321 ⁹⁵
Zire 72 GPS Kit (Zire 72, 64mb memory card, GPS receiver, car windshield holder, charger)	540 ⁹⁵
Tungsten E2 (200mhz, 32mb)	253 ⁹⁵
Tungsten T5 (419mhz, 160mb, Blue)	422 ⁹⁵

FLASH MEMORY

COMPACT FLASH (CF)

Kingston 128mb	27 ⁹⁵	Lexar 40x512mb	83 ⁹⁵
Kingston 256mb	39 ⁹⁵	Lexar 40x1gb	130 ⁹⁵
Kingston 512mb	61 ⁹⁵	Lexar 80x512mb	93 ⁹⁵
Kingston 1gb	99 ⁹⁵	Lexar 80x1gb	147 ⁹⁵
Kingston 2gb	216 ⁹⁵	Lexar 80x2gb	279 ⁹⁵

FLASH DRIVE

USB PORTABLE DRIVES

Apacer 128mb	30 ⁹⁵	Lexar 40x256mb	47 ⁹⁵
Apacer 256mb	42 ⁹⁵	Lexar 40x512mb	74 ⁹⁵
Apacer 512mb	68 ⁹⁵	Lexar 40x1gb	114 ⁹⁵
Apacer 1gb	105 ⁹⁵	Lexar 80x1gb	133 ⁹⁵
Apacer 2gb	197 ⁹⁵		

EXTERNAL HARD DRIVES

Grey-Tech's premium external desktop hard drives feature both Firewire and USB 2.0 interfaces for PC and MAC use. The compact, high quality aluminum design radiates heat quickly and makes these units suitable for portable use. Silent operation. They are stackable and can be daisy chained using the IN/OUT Firewire ports. Interface cables and power adapter included. All drives feature 7,200 rpm AV speeds.



120GB with Seagate drive, 8mb cache, 7,200 rpm (#GT-MINI120PRO)	189 ⁹⁵
160GB with Seagate drive, 8mb cache, 7,200 rpm (#GT-MINI160PRO)	209 ⁹⁵

Custom routines available
Corporate purchase orders welcome
Prices already cash discounted.
credit cards subject to surcharge

250GB with Seagate drive, 8mb cache, 7,200 rpm (#GT-MINI250PRO)	269 ⁹⁵
400GB with Seagate drive, 8mb cache, 7,200 rpm (#GT-MINI400PRO)	489 ⁹⁵

Prices subject to change without notice
All products come with full warranty
We ship across Canada
Order online www.greytech.com

MP3 PLAYERS

Lexar LDP-600 with FM tuner, voice record, and FM radio transmitter 256mb/512mb 134 ⁹⁵	178 ⁹⁵
Creative Muvo TX FM 256mb	117 ⁹⁵
Creative Muvo TX FM 512mb	170 ⁹⁵
Creative Muvo TX FM 1024mb	210 ⁹⁵
Creative Micro N200 512mb	169 ⁹⁵
Creative Micro N200 1024mb	208 ⁹⁵
Creative Nomad Zen Micro 5GB	281 ⁹⁵
Creative Zen Touch 20GB	322 ⁹⁵
Creative Zen Touch 40GB	418 ⁹⁵
Creative Nomad Zen 30GB	291 ⁹⁵
Creative Multi Media Center 20GB	588 ⁹⁵

SCANNERS

EPSON	
2480 Photo 2400x4800	128 ⁹⁵
2580 Photo 2400x4800 motorized	189 ⁹⁵
4180 Photo 4800x9600	236 ⁹⁵
4870 Photo 4800x9600	457 ⁹⁵
4990 Photo 4800x9600	568 ⁹⁵
4990 Photo Pro 4800x9600	750 ⁹⁵

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PROCESSORS

INTEL PENTIUM 4 PGA Retail Boxed	
2.40GHz (533MHz, 1mb cache)	176 ⁹⁵
3.00GHz (800MHz, 1mb cache)	255 ⁹⁵
3.20GHz (800MHz, 1mb cache)	300 ⁹⁵
INTEL CELERON LGA Retail Boxed	
2.00GHz (400MHz, 128kb cache)	95 ⁹⁵
3.06GHz (533MHz, 256kb cache)	172 ⁹⁵
INTEL PENTIUM 4 LGA Retail Boxed	
2.80GHz (800MHz, 1mb, P4-520)	236 ⁹⁵
3.00GHz (800MHz, 1mb, P4-530)	255 ⁹⁵
3.00GHz (64-bit, 2mb, P4-630)	316 ⁹⁵
3.20GHz (800MHz, 1mb, P4-640)	303 ⁹⁵
3.20GHz (64-bit, 2mb, P4-540)	383 ⁹⁵
3.40GHz (800MHz, 1mb, P4-550)	378 ⁹⁵
3.60GHz (800MHz, 1mb, P4-560)	549 ⁹⁵
AMD ATHLON 64 Retail Boxed	
3000+ Socket 939 (333MHz)	193 ⁹⁵
3500+ Socket 939 (333MHz)	347 ⁹⁵
3800+ Socket 939 (333MHz)	483 ⁹⁵

MOTHERBOARDS

FOR INTEL PROCESSORS

Gigabyte GA-8S661FXMP w/video	71 ⁹⁵
Asus P4B800-MX	83 ⁹⁵
Asus P4P800-EDX	151 ⁹⁵
Asus P5S800-VM w/video LGA	91 ⁹⁵
Asus P5P800 LGA	129 ⁹⁵
Asus P5GDI-VM w/video LGA	136 ⁹⁵
Asus P5GDI LGA	148 ⁹⁵
Asus P5GDC-DX LGA	191 ⁹⁵
Asus P5AD2E-DX LGA	258 ⁹⁵
Asus P5AD2E-PREMLGA	299 ⁹⁵
Asus P5WD2-PR LGA 955	294 ⁹⁵

FOR AMD PROCESSORS

Asus K8V-X (Athlon 64 754)	106 ⁹⁵
Asus K8V-SX-DX (Athlon 64 754)	147 ⁹⁵
Asus ABV-DE (Athlon 64 939)	152 ⁹⁵
Asus ABN-SLI (Athlon 64 939)	211 ⁹⁵
Asus ABN-SLI-DX (Athlon 64 939)	232 ⁹⁵

HARD DRIVES

SEAGATE EIDE (PATA)	
40GB (ST340014A) 2mb 5years	78 ⁹⁵
80GB (ST380011A) 2mb 5years	82 ⁹⁵
120GB (ST3120022A) 2mb 5years	105 ⁹⁵
120GB (ST3120026A) 8mb 5years	111 ⁹⁵
160GB (ST3160023A) 8mb 5years	122 ⁹⁵
160GB (ST3200822A) 8mb 5years	146 ⁹⁵
250GB (ST3250823A) 8mb 5years	181 ⁹⁵
SEAGATE SERIAL (SATA)	
80GB (ST380817AS) 8mb SA2TA	90 ⁹⁵
120GB (ST3120827AS) 8mb SA2TA	120 ⁹⁵
160GB (ST3160827AS) 8mb SA2TA	132 ⁹⁵
200GB (ST3200826AS) 8mb SA2TA	161 ⁹⁵
250GB (ST3250826AS) 8mb SA2TA	204 ⁹⁵
300GB (ST3300823AS) 8mb SA2TA	261 ⁹⁵
400GB (ST3400823AS) 8mb SA2TA	423 ⁹⁵

See our website for other brands

CASES

GREY-TECH	
GT-5130 (450 watts, USB, CSA)	44 ⁹⁵
RMC45 4u Rackmount 330 watts	2 49 ⁹⁵
ANTEC	
SONATA (380 watts, USB)	148 ⁹⁵
SLK1650 (350 watts, USB)	92 ⁹⁵
SLK1650B (350 watts, USB)	96 ⁹⁵
SLK2650BQE (350 watts, USB)	100 ⁹⁵
4U Rackmount 400 watts	276 ⁹⁵

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OPTICAL DRIVES

CD-ROMS	
LG 52x	21 ⁹⁵
DVD-ROMS	
LG/Liteon DVD 16X	34 ⁹⁵ /34 ⁹⁵
CD WRITERS	
LG (GCE-8527B) 52x/32x/52	36 ⁹⁵
COMBINATION DRIVES	
LG (4521) 52x CDRW, 16X DVD-R	52 ⁹⁵
DVD WRITERS	
Pioneer (DVR-109) 16x+16x-DL	79 ⁹⁵
Pioneer (DVR-109EXT External Kit)	189 ⁹⁵
Plextor (PX-716A) 16x+8x	161 ⁹⁵
Plextor (PX-716SATA) 16x+8x	177 ⁹⁵
Plextor (PX-716AL) 16x+8x-Slot	214 ⁹⁵
LG (4163BB) 16x+16x-DL	73 ⁹⁵
Liteon (16735) 16x+16x-DL	71 ⁹⁵
Asus (1608P) 16x+16x-DL	93 ⁹⁵
NEC (3520A) 16x+16x-DL	78 ⁹⁵

DVD DUPLICATORS

Push a button and make up to nine copies of a DVD or CD. Simple to use. Self Contained. Easy to read LCD Display. Designed for continuous operation.

5 Target unit (w/GT-DVDS50797)	799 ⁹⁵
7 Target unit (w/GT-DVDS5616)	939 ⁹⁵
9 Target unit (w/GT-DVDS5617)	1219 ⁹⁵

VIDEO CARDS

ASUS	
R9200SE-T 128mb, TVout, AGP	59 ⁹⁵
R9550GE-TD 128mb, DVI, AGP	91 ⁹⁵
R9600SE-TD 128mb, DVI, AGP	99 ⁹⁵
X300SE 128mb, TVout, PCIE	87 ⁹⁵
X600XTD 128mb, TVout, PCIE	260 ⁹⁵
X700PRO 256mb, TVout, PCIE	264 ⁹⁵
EN6800GT 128mb, PCIE	242 ⁹⁵
X800XL-2DVT 256mb, 2xDVI, PCIE	404 ⁹⁵
X800XT-TVD 256mb, AGP	688 ⁹⁵
X850XT-2HD 256mb, 2xDVI, PCIE	684 ⁹⁵

ATI TECHNOLOGIES

X800XL 256mb, DVI, PCIE	413 ⁹⁵
AIW X600 Pro 256mb, DVI, PCIE	304 ⁹⁵
AIW X800XT 256mb, DVI, AGP	609 ⁹⁵

SAPPHIRE

X300SE 128mb, DVI, PCIE	78 ⁹⁵
X600Pro 128mb, DVI, PCIE	119 ⁹⁵
9600XT 128mb, DVI, AGP	136 ⁹⁵
X800XL 256mb, DVI, PCIE	397 ⁹⁵
X850XT 256mb, DVI, PCIE	587 ⁹⁵

GIGABYTE

NX66T128D 128mb, DVI, PCIE	251 ⁹⁵
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TV TUNER/CAPTURE


HAUPPAUGE	
701 WINTV GO EXTERNAL TUNER USB	101 ⁹⁵
980 WINTV-PVR 250 REMOTE MPEG2	183 ⁹⁵
990 WINTV-PVR 350 REMOTE MPEG2	237 ⁹⁵
ATI	
TV-Wonder PRO TUNER PCI	97 ⁹⁵
TV-Wonder Elite TUNER PCI	198 ⁹⁵
PLEXTOR	
PX-TV402U CONVERTX USB2 MPEG2	229 ⁹⁵

POWER SUPPLIES

OCZ	
Modstream 450 watts 24 pin	107 ⁹⁵
Modstream 520 watts 24 pin	143 ⁹⁵
ENERMAX	
Dual Fan 350 watts	59 ⁹⁵
NoiseTaker EG425P 420 watts	100 ⁹⁵
NoiseTaker EG701A 600 watts	159 ⁹⁵
GREY-TECH 500watts, CSA	24 ⁹⁵

LCD MONITORS

The World's Fastest LCD Display



Viewsonic VX924

- 19 inch 1280x1024
- 550:1 contrast ratio
- 4ms response time
- 270 nits brightness
- Analog and Digital

\$549⁹⁵

VIEWSONIC

15" VX510 25ms 450:1	262 ⁹⁵
15" VG510B 25ms 400:1 DVI	313 ⁹⁵
17" VE710B 25ms 450:1	318 ⁹⁵
17" VG710B 16ms 450:1 DVI	387 ⁹⁵
17" VP171B 2-Bms 500:1 DVI	424 ⁹⁵
19" VG900B 25ms 600:1	450 ⁹⁵
19" VX924 4ms 550:1	549 ⁹⁵
20" VP201B 16ms 400:1	866 ⁹⁵
21" VP211B 25ms 600:1	1117 ⁹⁵
23" VP231WB wide 16ms 500:1	1998 ⁹⁵

SAMSUNG

15" 510N 16ms 450:1	335 ⁹⁵
17" 713V 25ms 600:1	370 ⁹⁵
17" 710V 12ms 600:1 DVI	369 ⁹⁵
17" 72X 12ms 500:1 DVI	595 ⁹⁵
19" 910V 25ms 800:1	562 ⁹⁵
19" 913V 25ms 800:1	563 ⁹⁵


ENVISION

17" 7410/7400 16ms 450:1	284 ⁹⁵
19" 9250 25ms 600:1	425 ⁹⁵

BENQ

17" T701 25 ms 450:1	325 ⁹⁵
17" FP71G+ 8ms 600:1	370 ⁹⁵
17" FP737-SBD 16ms 450:1	403 ⁹⁵
19" FP931 16ms 450:1	462 ⁹⁵

DVD / CD MEDIA



Save on DVD and CD media when you purchase in quantity

ProDisc DVD Media

DVD-R 8x	50 pack \$21 ⁹⁵ , 200 pack \$80 ⁹⁵
DVD-R 8x white inkjet printable surface	50 pack \$24 ⁹⁵ , 200 pack \$89 ⁹⁵

DVD+R 16x	50 pack \$33 ⁹⁵ , 200 pack \$123 ⁹⁵
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Ritek DVD Media

DVD-R 4x	100 pack (phasing out) surface
DVD-R 4x white inkjet printable surface	50 pack \$23 ⁹⁵ , 200 pack \$85 ⁹⁵
DVD-R 8x	50 pack \$24 ⁹⁵ , 200 pack \$89 ⁹⁵
DVD-R 8x white inkjet printable surface	50 pack \$26 ⁹⁵ , 200 pack \$94 ⁹⁵

Ritek CD-R Media

Ritek 700mb	100 pack \$20 ⁹⁵ , 400 pack \$76 ⁹⁵
Ritek 700mb white inkjet printable surface	100 pack \$26 ⁹⁵ , 400 pack \$95 ⁹⁵

DVD/JEWEL CASES

Jewel Case Single Acrylic	29 ⁹⁵
Pack of 50, \$11 ⁹⁵ , 100, \$22 ⁹⁵ , 200, \$40 ⁹⁵	
Jewel Case Single Acrylic (Slits)	21 ⁹⁵
Pack of 50, \$8 ⁹⁵ , 100, \$16 ⁹⁵ , 200, \$26 ⁹⁵	
Jewel Case Double Acrylic	39 ⁹⁵
Pack of 50, \$13 ⁹⁵ , 100, \$23 ⁹⁵ , 200, \$42 ⁹⁵	
DVD Case Single Vinyl	59 ⁹⁵
Pack of 50, \$17 ⁹⁵ , 100, \$32 ⁹⁵ , 200, \$58 ⁹⁵	
SPECIAL DVD Case Double Vinyl	39 ⁹⁵
Pack of 50, \$12 ⁹⁵ , 100, \$23 ⁹⁵ , 200, \$42 ⁹⁵	
DVD Case Single Vinyl (Slits)	59 ⁹⁵
Pack of 50, \$17 ⁹⁵ , 100, \$32 ⁹⁵ , 200, \$58 ⁹⁵	

CRT MONITORS

VIEWSONIC	
17" E70/E70B	158 ⁹⁵
17" E70F/E70FSB	178 ⁹⁵ /198 ⁹⁵
19" E90/G90F	235 ⁹⁵ /271 ⁹⁵
21" G810	478 ⁹⁵
21" G220F/G220FB	548 ⁹⁵ /551 ⁹⁵
22" P220F	677 ⁹⁵
22" P225F/P225FB	745 ⁹⁵ /753 ⁹⁵
SAMSUNG	
17" 793DF	163 ⁹⁵
19" 997DF	312 ⁹⁵
ACER	
17" AC711/AC711B	154 ⁹⁵ /149 ⁹⁵

NETWORKING



Dlink
High Performance Wireless "G" Router

\$68⁹⁵

#DL-DI-524

WIRELESS NETWORKING

Dlink Wireless Router DI-524 (g)	68 ⁹⁵
Dlink Wireless Router DI-614 (b)	93 ⁹⁵
Dlink Wireless Router DI-624 (g)	92 ⁹⁵
Dlink Wireless PCI Card DWL-G510 (g)	62 ⁹⁵
Dlink Wireless PCI Card DWL-G520 (g)	70 ⁹⁵
Dlink Wireless PC Card DWL-G520 (g)	59 ⁹⁵
Dlink Wireless PC Card DWL-G530 (g)	69 ⁹⁵
Dlink Wireless Access Point DWL-2100AP (g)	127 ⁹⁵
Dlink Wireless PCI Card DWL-520+ (4mb)	54 ⁹⁵
Dlink Wireless USB Port DWL-122 (b)	45 ⁹⁵
Asus Wireless PCI Card	46 ⁹⁵
Linksys Wireless Router BEFW1154 (b)	71 ⁹⁵
Linksys Wireless Router WRT54G (g)	82 ⁹⁵
Linksys Wireless Kit WPC54G (g)	132 ⁹⁵

ROUTERS

Dlink Router 4-port DI-604	47 ⁹⁵
Dlink Router 4-port w/LPT Port DI-704P	78 ⁹⁵
Dlink Router 8-port w/LPT Port DI-707P	100 ⁹⁵
Linksys Router 4-port NR041	52 ⁹⁵

ADAPTERS

Dlink 10/100 NIC DFE-538-TX (PCI)	12 ⁹⁵
Dlink 10/100 NIC DGE-550T (PCI)	107 ⁹⁵
Dlink 10/100/1000 NIC DGE-530T (PCI)	34 ⁹⁵
Linksys Network of Power line	
PLUSB10 USB adapter	89 ⁹⁵
PLEBR10 Broadband bridge	89 ⁹⁵

PCMCIA/CARDBUS


Dlink 10/100 NIC DFE-590TXD (Cardbus)	44 ⁹⁵
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HUBS & SWITCHES

Dlink Switch 5-port 10/100 DGS-1005D	102 ⁹⁵
Dlink Switch 8-port 10/100 DGS-1008D	142 ⁹⁵
Dlink Switch 5-port DSS-5+	45 ⁹⁵
Dlink Switch 8-port 10/100 DSS-8+	49 ⁹⁵
Dlink Switch 16-port 10/100 DSS-16+	103 ⁹⁵
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But no matter the medium, there's another issue facing long-term digital video storage: that of backwards compatibility and usability. Will we be able to read and access data if, as suspected, major filing system changes come with a new Windows server system [Longhorn]? How will continued advances in laser technology, storage devices and manufacturing materials affect digital content five years hence?

As we said last time, forever is a long time – getting there surely means new hurdles to overcome.

By Lee Rickwood

Lee Rickwood is a freelance writer and independent video producer. He can be reached at videodaze@goodmedia.com.

General and specific tips for CD and DVD archiving and long-term data storage are available online as a quick reference guide at:
<http://www.itl.nist.gov/div895/carefordisc/discare.html>

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Sharing digital pictures via email

A neophyte's guide

OK, you've finally jumped on the high-tech bandwagon and purchased one of those fancy digital cameras. Now what? While many of these "digicams" promise point and shoot simplicity, downloading the pictures to a computer and emailing them to friends and family isn't always a picture perfect task.

We realize that for some HUB readers this is old hat, but hope that you

know someone that might benefit from the following 10-step walk-through for budding shutterbugs:

1. Take your photos, delete the ones you don't want


After putting batteries in the camera and popping in the memory card, have fun snapping photos around town. Most digital cameras have a small LCD screen on the back of the unit to display what the picture looks like. If you don't like it, delete it. It's that simple.


2. Install the software

Once you're ready to copy the pictures to a computer, first install the software that shipped with the camera. Once you pop in the CD-ROM, it'll prompt you to install the camera "driver" – this tells your PC to recognize and communicate with the camera when attached. There should also be image viewing/editing software on this disc, so go ahead and install that too.

3. Attach the camera

Now it's time to connect the camera to the computer, usually via the short USB cord included in the camera box. Find and connect the appropriate ends of the cord to the camera and computer, and turn on the







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camera. Your computer will tell you it has found your new device. Note: some PC printers have memory card readers, so you can also pop the memory card out of your camera and put it into the slot to eliminate this step.

4. Transfer photos to the PC

If it doesn't launch automatically, look for the name of the recently installed photo viewing/editing software and open it. One of the options should be to upload images from a camera. In other cases, the camera will launch a new drive letter on your computer (such as "E:" or "F:"). You can use Windows Explorer or My Computer to view the images on the

memory card from here. Double-clicking the individual files will launch an image viewing program.

5. Save and rename photos

Now it's time to save your photos to your hard drive. Create a new directory called "Pix." Or, with newer versions of Windows, you may choose to save photos in the existing "My Pictures" folder. You may notice the photos have an arbitrary file name, such as "DSC00007.jpg." It's recommended to rename them so you know what the photo is without having to view the file (eg. "babysteps.jpg"). You can rename by left-mouse-clicking once on a selected file and typing something new in, maintaining the same file extension (eg. ".jpg").

6. Edit pics

The software that ships with your camera allows users to play around with the digital photos. This includes removing red eye, lightening or darkening images, rotating and cropping, resizing, artificial zooming, and a handful of other fun or practical tweaks. Be sure to explore all the options, including the ability to create fun projects such as greeting cards, calendars and t-shirt transfers. It is highly recommended that you create a back-up of your original digital photos in case your creative editing doesn't turn out how you want.

7. Print them if you like

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place in an album or wallet, purchase photo paper (matte or glossy) and be sure to have a lot of color ink, because photos have a curious way of emptying cartridges quickly. Most programs (even plain old Windows) have options to print photos in specific sizes and/or quality. If the camera is a two megapixel camera or lower, don't attempt to print a full page picture ("8.5 x 11") because it'll look grainy. A three megapixel camera or higher is always recommended.

8. Type the message, attach the pics

Save your money on ink and share your precious memories electronically. Open your favorite email program (such as Outlook) and start writing a message. When you're done writing, look for the "attach" but-



ton (which may look like a paper clip, but not the annoying animated kind that pops up at inopportune moments) and click it. Now go to the directory/folder that contains your photos and attach the desired image(s). Remember not to send a photo that's too big (usually more than one megabyte is too big) or it may bounce back saying the recipient cannot accept files of that size. Photo editing software can be used to resize pictures before sending.

9. Other ways to share digital memories

When coupled with a computer, digital photos can also be shared and enjoyed in other ways: copied (aka "burned") to a blank CD to watch a slideshow on a DVD player, made into computer wallpaper so that image is seen when the PC is turned on, posted to a Web site, published on one of the many "virtual photo album" services in cyberspace, or emailed to a photo printing company for paper copies.

10. Erase memory card and start again

Once you've copied the images to your computer for safekeeping, you can delete all the photos from the camera's memory card and start again. If you find you can't store as many photos on the memory card as you might like, you can always reduce the image quality of the photos on the camera (refer to the manual on how to do that) or you can buy an extra memory card that can store many more photos.

By Marc Saltzman



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How to create a stunning multimedia slideshow

Digital photography is a wonderful thing. Snap the picture, see it immediately, then copy it over to your PC for some editing, printing or emailing.

But one of the most overlooked yet most touching ways of sharing your precious memories with friends and family is creating a slideshow, complete with fancy transition sequences, a fitting piece of music and audio narration.

When you're done, the slideshow can be sent electronically anywhere in the world with the click of a mouse button, or burned onto a disc to watch on a DVD player for a big-screen experience.

The kicker? Not only is it a cinch to create – even for technically challenged folks who don't know the difference between a megabyte, megapixel or megaphone – but the software to create such a project is completely free to download and use.

The following walkthrough explains what you need for a multimedia slideshow and provides step-by-step instructions on how to create it.

First things first: decide on a theme for your slideshow, such as a montage of your kids playing or a recent trip down south with your significant other. Then, find where those photos are saved on your computer (or a CD or memory card) and create a new folder for this project (such as C:\Slideshow). If you have old-fashioned paper photos in a shoebox or in an album, scan them into your computer.

Now you can install software to create the slideshow. Our top pick is



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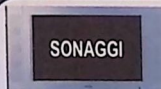
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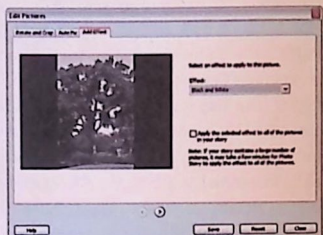
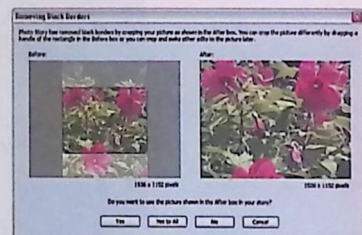
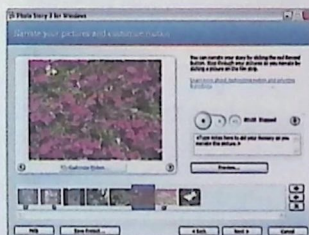
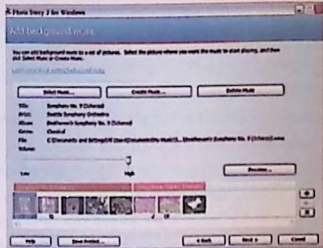
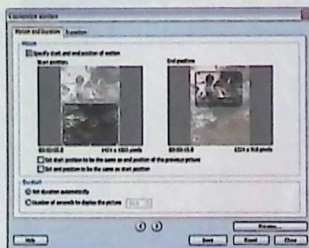
Windows Photo Story 3, a free program that can be downloaded from www.microsoft.com/windowsxp/using/digitalphotography/photostory. Minimum requirements are a Pentium 3 700Mhz or equivalent processor, any version of Windows XP, 256MB of RAM and 400MB of hard drive space. While the software is free to download and use, you must first

validate your copy of Windows XP to verify it's genuine; this short, one-time process involves typing in a code that is usually found on the side of your PC or with software that came with it.

Next you must import your photos into Photo

Story 3. Once you launch the software, simply click Import Photos and choose the folder on your hard drive that has your images. Once imported, you will see them at the bottom of the screen in a timeline. Here, you can use the mouse to drag and drop them into your desired order. Otherwise, they will be presented alphabetically. You can also do some minor tweaking of your photos such as correcting colour levels, removing red eye, rotating, cropping or even adding special effects to each picture. When you're done, click Next.

The next step is to add text on the screen for



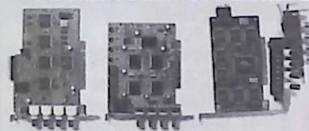
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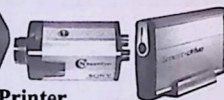
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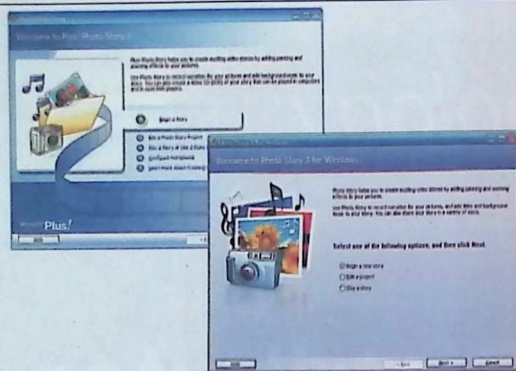
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select photos, if so desired. You can also choose the font, colour, size and where on the screen the words will appear. Click Next when you're done.

If your computer has a microphone, the next stage lets you record commentary using your own voice. Simply click the red record button to say something. Don't worry – no one likes the sound of their recorded voice!

Click Next to add some music to your photos. Click Select Music to choose a fitting MP3 or WMA file on your hard drive, or click Create Music to customize the mood of the slideshow with preset melodies and instruments.

Click Preview if you want to see how your slideshow looks so far. You will notice that the song you chose will fade out as your slideshow fades to black. Neat, huh?

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By Marc Saltzman

Questions and comments relating to the Home Entertainment section, including Marc Saltzman's monthly column, can be sent to homeentertainment@publishing.ca.

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The Home Entertainment Show in New York: When gadgets collide

We stopped by the Home Entertainment Show (April 29 to May 1) to check out the industry's latest audio-visual offerings. When we weren't busy trying to find our way through the Hilton's byzantine elevator system – a trail of bread crumbs might have helped – or inadvertently disturbing darkened "audio" rooms where middle-aged men – eyes shut, listening intently – sat like reverent monks before monolithic speaker systems (usually priced upwards of \$10,000), we noticed that conver-

gence (i.e. the combining of the worlds of home theatre, music, movies, photography, and gaming) was the predominant theme of this year's show.

No single product embodied the notion of convergence better than the Ultra Cordless Optical Mouse from Gyration. The Ultra cleverly splices the DNA of a desktop mouse with a traditional TV remote control. The result: a wireless "super mouse" that can actually be lifted up off the desk and used in mid-air. Gyration demonstrated the Ultra's capabilities as a channel changer, Web browser, DVD remote and video game controller (the demonstrator swung the mouse through the air, effectively simulating a golf swing in the PC version of EA's *Tiger Woods 2004*). We were impressed. The Ultra, packaged with a wireless keyboard, retails for US\$129.95.

RCA's new HDTV models, which debut this fall, appear to be designed specifically with the Ultra in mind. The Scenium Profile ultra-thin line not only looks superb (thanks to state of the art DLP technology), but the units also come equipped with a few unexpected surprises, including the ability to surf the Internet and view photos from a PC hard drive. They're a mere 6.85 inches deep, and are light enough to hang on a living room wall. The 61-inch model retails for US\$6,999, while the 50-inch sells for US\$5,999.

ZVOX Mini with PortaParty carrybag



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Each year, surround sound systems seem to be coming in increasingly smaller packages. No small package impressed us more with its big, rich multi-channel sound this year than Yamaha's Digital Sound Projector. The YSP-1 does a fantastic job of simulating full surround sound from a single box. The unit is so effective that during the demonstration we were actually peering over our shoulders trying to figure out where the rear speakers were hidden. Without multiple speakers to worry about, there's no clutter, no more trying to hide wires, and no more trying to explain to your significant other why rear speakers are absolutely essential for surround sound. The single component contains 42 speaker drivers that project precisely focused beams of sound. Aesthetically, the unit looks stylish too, and is intentionally designed to complement any flat-screen TV display. Price: US\$1,499.

The ZVOX Mini is another big sound/small package that got our attention. It delivers a surprisingly rich, realistic sound from a single cabinet that's only slightly bigger than the average laptop computer. The Mini is perfect for LCD TVs, iPods, PCs and PSPs. The PortaParty carrybag, sold separately, makes it easy to take on the road. With its rechargeable battery, this is quite possibly the perfect portable audio system. The Mini retails for US\$199.99. We also spent some quality time with the I-Sonic Entertainment System and were intrigued by what we saw and heard. The I-Sonic is the first unit of its kind to incorporate iBiquity's HD

Belkin TuneStage



Radiotechnology, which means that AM/FM broadcasts can achieve near CD-quality sound. The I-Sonic also comes equipped with a DVD/CD player, and it's XM satellite-ready. Its small size makes it ideal for kitchen counters, bedrooms, and cramped home entertainment units. It's priced at \$599.

On the smaller end of the audio spectrum, we saw the expected plethora of products designed to trick-out the iPod. But no iPod-related product caught our eye quite like Belkin's remarkable TuneStage. The TuneStage cleverly combines an iPod with Bluetooth technology, basically transforming your iPod into a remote control for your home stereo system with a range of up to 33 feet (10 metres). Imagine: Your iPod tracklist being wirelessly streamed to your home stereo. We saw it in action, and it works beautifully. Price: US\$179.99.

If you've ever attended the Home Entertainment Show, or any show of its kind, then you know it's virtually impossible to walk away without a few high end If-I-Won-The-Lottery dream products. On our list this year: the Kaleidescape, an absurdly posh machine that combines your entire DVD collection with a mammoth computer hard drive. Thanks to a full colour touch-screen monitor, every DVD in your collection is, quite literally, at your fingertips, without any load times. Prices start at around \$22,500, and can climb to well over \$100,000. Our other dream product of choice: the BodySound Chair (\$2,750). The BodySound is basically your average leather barca lounge crossed with a home theatre surround sound system. The speakers are actually all stuffed inside the chair, and are ingeniously positioned behind your lower back to transmit sound and vibration directly into your spine. Sound is conducted through your bones, which means that you not only hear your favourite DVDs or CDs, you feel them, too. (The unit reminded us of those massage chairs we can't ever seem to get out of in the Sharper Image stores.) The result is positively mesmerizing. Combine the Kaleidescape system with the BodySound chair, and you have home theatre convergence nirvana.

By Scott Jones

BodySound Chair



Yamaha YSP-1 Digital Sound Projector



Computerized sewing machine impresses, but not meant for newbies

Sewing machines and computers. They don't sound like a probable combination. But this is the 21st century, and computerized sewing machines do exist.

One of the most powerful – and at \$7499.95, among the most expensive – is the Brother Innovis NV-4000D. Officially marketed as an "embroidery machine," the NV-4000D can handle regular sewing as well, but it is no more a conventional sewing machine than a Ferrari is a

conventional automobile. Its features include automatic needle threading and thread trimming, and an onboard computer that can execute stitching, buttonhole, and embroidery patterns from the NV-4000D's own memory, plug-in memory cards, or from a PC via the NV-4000D's USB port.

That's right, a sewing machine with a USB port, large pen-operated colour touchscreen, and even a computer-controlled embroidery frame

that moves the fabric around without any human intervention. You can even scan an image into the NV-4000D, have it translated into a colour-coded embroidery pattern, and sew it onto whatever fabric you wish.

Clearly, this is not your great-grandmother's pedal-driven Singer. But how well do the NV-4000D's mind-boggling capabilities translate into actual sewn and



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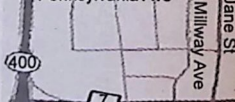
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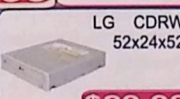
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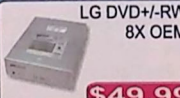
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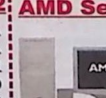
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embroidered items? To find out, HUB enlisted the help of Susan Trott, owner of Tagger Dive Suits (www.tjtdesign.com/Tagger), a custom designer and manufacturer of swim suits. Trott also has extensive experience in building and trouble-shooting computers.

Her verdict, after spending two months testing the NV-4000D: "In general, the NV-4000D is an advanced machine that does a lot of things well, but it is not for beginners. In fact, if you are a first-time sewer, you may find the NV-4000D to be somewhat intimidating."

What the NV-4000D does well

The NV-4000D's pen-controlled touchscreen boasts a colour graphic interface worthy of a gaming PC – "I don't like sticks, so I just touch it with my finger," says Trott. Using the touchscreen, a sewer can drill down through menus detailing all kinds of stitches, decorative patterns and embroidery patterns, including 134 Disney embroidery patterns pre-loaded into its memory. All you have to do is find the one you want and tap on it; the NV-4000D will do the rest.

Well, almost. Since the NV-4000D only handles one spool of thread at a time, the sewer has to change the thread every time the machine calls for another colour. No problem: The NV-4000D will tell you which thread colours you need. Once you put in the first thread – the NV-4000D will thread the needle for you with its little robotic arm – the machine will start to embroider the selected pattern until the next colour is needed. The NV-4000D will then stop and ask for the second colour, and once it is threaded, the embroidering will continue until the third colour is needed, and so until the pattern is done.

The NV-4000D is also good at sewing decorative stitches. "Just select the one you want and the distance of fabric you want sewn, line up the fabric, and away it goes," says Trott. "When the stitch is done, the NV-4000D will even trim off the excess thread for you."

Where the NV-4000D really excels is at sewing button holes. Normally a nightmare for manual sewers, button holes are a cinch with the computerized NV-4000D. "You select the pattern you want, and the NV-4000D will sew the button hole automatically," she says. "You can even walk away and come back when it's done."

Shortcomings

When it works, the NV-4000D's automatic threader is a great device. But when it doesn't, threading the

needle manually is extremely difficult. This is because the NV-4000D isn't designed for manual threading, which means there isn't much room for human-sized fingers.

"The NV-4000D also has a function that mimics the edging and cutting offered by four-thread serging machines, but it really doesn't do it well," says Trott. "One reason is because it is only using one thread. The other is that the NV-4000D's cutting foot sometimes doesn't cut the fabric cleanly."

As for embroidery? While any pre-loaded patterns will re-size without problems, custom images often have trouble. If the pattern is too small, the machine can end up bunching up the stitches, tearing the fabric, or even getting the fabric stuck in the machine's "feed dogs" (the parts that automatically advance the fabric past the needle).

Meanwhile, the process of scanning an image and creating an embroidery pattern "is not intuitive," Trott observes. "In fact, it is a four step process that requires two pieces of software to get from scanned picture to embroidered image."

The Bottom Line

Despite its shortcomings, Susan Trott is impressed by the NV-4000D's capabilities, plus all the extra attachments that are included with this machine. "Brother has taken a lot of the guesswork out of sewing with the NV-4000D," she says. "Still, unless you have some experience in sewing and are prepared to go through a significant learning curve, you may find the computerized NV-4000D a bit intimidating."

By James Careless



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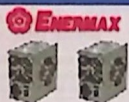
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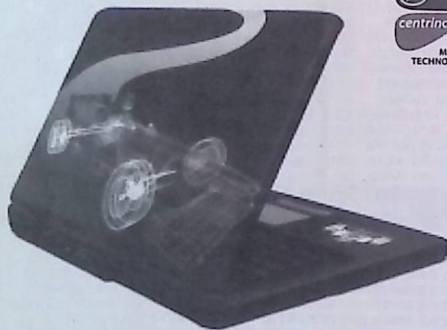
Connected: Knowing your digital rights

Digital technology has freed us from the yoke of traditional content delivery mechanisms in ways we could never have imagined scant years ago. We no longer need to schedule our lives according to the whims of media conglomerates in order to partake of their wares; digital delivery affords us the luxury of entertainment consumption in a manner consistent with our desires. We may pause and rewind live television, enjoy theatre-quality picture and sound within our own residences, and even listen to entire music collections anywhere, anytime on devices so portable as to be viewed essential equipment upon venturing outside the home.

Unfortunately, these new freedoms were bestowed upon a populace ill-equipped to deal with them from a regulatory perspective. Infinitely replicable digital media, when combined with the Internet as a distribution conduit, would lead to some rather serious consequences once users started putting two and two together. With the advent of Napster, the genie was well and truly out of the bottle, leaving media companies scrambling to lobby government to enact legislation in an attempt to re-establish the status quo.

While this lobbying activity's initial intention may well have been restoring the imbalance of power existent in years past, the endeavour has been considerably more fruitful for media companies, especially in the United States.

One of the first pieces of legislation enacted south of the border was the Digital Millennium Copyright Act (DMCA) in 1998, which among other things makes it illegal to circumvent or enable circumvention by any means the copy protection mechanisms or encryption technology.



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encryption mechanism employed on DVDs) was freely released to combat this situation, the DVD Copy Control Association issued over 500 lawsuits in 11 separate nations to shut it down. The DMCA in this instance turned paying customers into criminals.

CSS encryption was so weak, however, that the code to decrypt it could readily be printed on a t-shirt. When clothing manufacturers actually started doing this, the DVD CCA sued them too.

The entertainment industry pursued legal remedies for years and caused severe financial strain for those against whom the suits were directed before finally giving up and moving on to bigger things in January of 2004, in essence acknowledging the situation as futile given the millions of copies available.

While the above illustrates the DMCA's ability to be used as a blunt instrument by corporations to further their interests, it really doesn't speak to the reasons why media companies might be interested in pursuing these protections in the first place. Certainly they are concerned with piracy, but the larger picture relates to a paradigm shift in consumer rights as it pertains to fair use.

When I purchase music, for instance, under fair use I should be able to make copies to preserve my "property" should the original become damaged, should I not? However, in reality I only own the piece of plastic the music came on in the first place and I license the content. When this content is being delivered digitally as well, our claims to ownership are even more tenuous.

To enforce this licensing, media companies have

teamed up with hardware and software manufacturers to implement what is known as Digital Rights Management (DRM) that may be used to sharply curtail my power with regards to fair use. I am forced into accepting proprietary file formats that do not allow me to transfer the content from one medium to another, tie me to particular technologies and their associated companies, and often tether me to corporate databases that monitor my media consumption for the purpose of determining how best they might market to my tastes in future.

DRM, under the protection of the DMCA, is becoming increasingly ubiquitous, and the investigation of it will form the basis of next month's article, where in we'll also examine Canada's more measured legislative response to the issues raised in the digital realm. Until then, why not take a look at "Endangered Gizmos" at www.eff.org/endangered for an entertaining yet thought provoking look at how legislation is stifling innovation.

By Ray Richards

Questions and comments relating to the Personal Computing section, including Ray Richards' monthly column, can be sent to personalcomputing@ppublishing.ca.

To find out more about your rights in the digital universe and the efforts being undertaken to protect them, visit the Electronic Freedom Foundation's Web site at www.eff.org for some fascinating content on current cases before the courts and issues facing legislators today.



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Moving to Mac

Hello, my name is Sean, and I am ... a Windows user.

Yeah, shock and horror, I know. It's probably not a big surprise that I'm a Windows user; after all, the majority of computer users out there use Windows. But there are a growing number of people out there who are starting to look into some of the alternatives. While many of the tech enthusiasts who really want to roll up their sleeves are learning to live with Linux, many of the rest of us are taking a look at an old friend: the Mac.

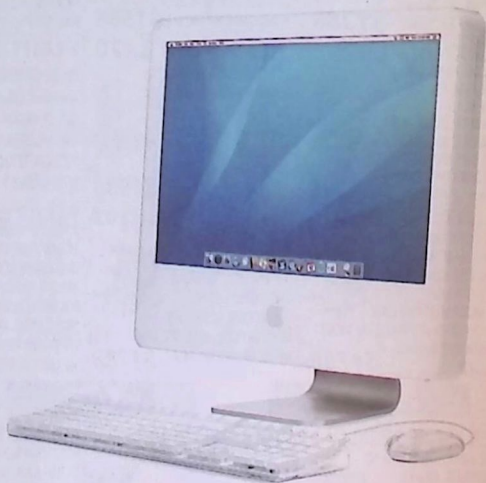
The OS cold war starts to thaw

For the longest time, obstinate Windows users claimed that Macintosh was an operating system for those who barely even knew how to click a mouse, and that it was all style over substance, but there are a few reasons why long-time Windows users are starting to check out the Mac.

The hugely successful iPod was more than just one of the best digital audio players going; it was also an ambassador for Apple. After embracing the iPod as a marvel of usability and design, many Windows users suddenly "got" a key component of the Apple culture, and started to think that the Mac might just be worth a look too.

Secondly, with the proliferation of viruses and spyware, many Windows users were starting to feel like keeping their Windows

machine was almost a full-time job. Because Windows is the most commonly-used operating system out there, it's no surprise that it's



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also the most targeted by no-goodniks. By making the jump to a Mac system, users could spend more time actually using their computer instead of spending so much time trying to batten down the hatches against potential intruders.

Mini Mac, major incentive

Probably one of the biggest incentives for people to move to the Mac was the 2005 release of the Mac Mini.

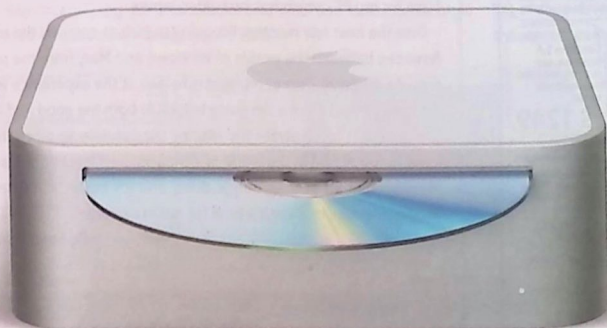
For years, the biggest hurdle for Windows users who were thinking of

making the switch to the Mac was the price. Just look through the ads in HUB and you'll see a ton of Windows-based machines for just a few hundred dollars. Thanks to the open architecture of the PC, any mom n' pop shop could put together their own Windows machine using value components, meaning there were many deals to be had.

Apple, on the other hand, has continued to insist on controlling both the hardware and the software, which meant that despite better control over the components that you'd find inside the computer, there were no deals to be had: the Apple price was the best price.

And despite the introduction of the value-oriented iMac, many Windows users who were potential switchers were unimpressed. By making the monitor a part of every single iMac, it meant a more expensive system, sometimes three times the price of an entry-level Windows system. It's the classic apples and oranges scenario, true, but Apple's reluctance to release a value-oriented system that didn't include the entire system didn't make it any easier for people to see the iMac's overall value.

The Mac Mini, which starts at \$629, changes the equation substantially. True, it's still more expensive than the cheapest Windows-based



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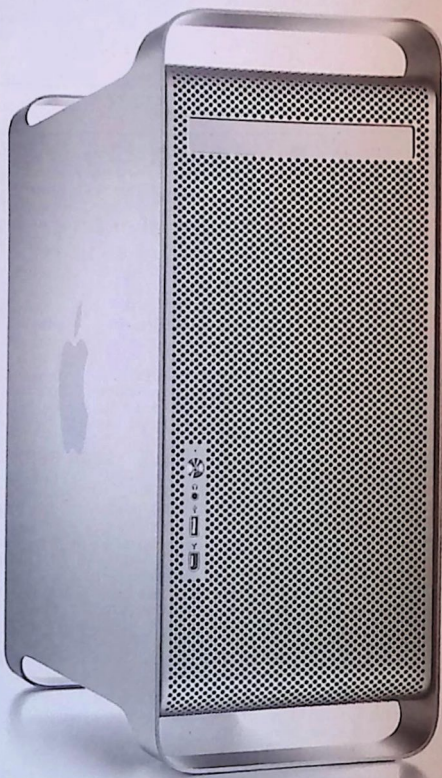
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computers, but by stripping it back to the basics and allowing people to use the monitors they already have, Apple has made the Mini far more tempting to potential switchers than the iMac ever was. In fact, the small size of the Mac Mini means it's extremely easy to just put it on top of the PC tower, and keep both machines around. With a KVM switch, you can even switch between the two on the fly.

It was the Mac Mini that finally made up my mind for me. With the amount of desk space and disposable income I have, I could never really justify picking up an iMac, especially after the iMac's move to the more expensive flat-panel screen. With the new Mini, I simply tucked it into one of the cubbyholes on my desk and share the same monitor I use for my PC, which has two video inputs.

Over the next few months, I'm going to look at some of the main differences between the worlds of Windows and Mac, from the perspective of a switcher. Part of my goal is to look at the experience in a realistic way, which means I'm going to look at both the good and the bad. The goal isn't to celebrate the Mac as the solution to all of the problems that you find in the world of Windows. Like the Windows PC, the Mac is a tool for getting things done, and it's better at some things than it is at others. Now it's time for me to explore.

By Sean Carruthers



Flash in the Can 2005

On location in Toronto

Flash Video seems to be going through a transition these days. Only 18 months ago, Macromedia Flash's limitations were frustratingly obvious for content developers, but now that new ideas have broadened the horizons of the software, the opportunities seem limitless.

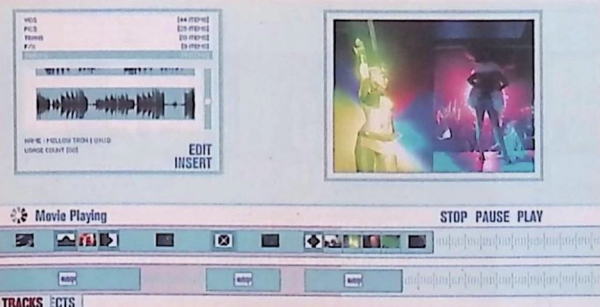
At Flash in the Can 2005 (www.fitc.ca) held in Toronto April 9 - 11, new frontiers for Flash Video were on display in seminars and workshops. The idea of seamless video online through Flash has already been utilized significantly by car manufacturers, who use commercial-style clips to showcase new models on the Web.

Jason Chesebrough knows this all too well as co-owner of Nemesis Group Inc., a Toronto-area marketing company that helps firms use the Web as an advertising tool. Chesebrough suggests that Flash's technology is already being developed for new levels of interactivity.

"I think back to Flash 5 when people were stoked on what could be done with a video clip, and two versions later we're talking about landing on the moon versus travelling to Neptune and establishing a colony," Chesebrough says. "Having a user select and scroll through a list of clips isn't the most exciting use of video in Flash, but there will be thousands of people accessing these clips at any given time or day since it's a benchmark of production on the Internet."

Interactive Flash Video that allows the user to change camera angles with a click is also very much a viable option, depending on the budget and bandwidth involved. Production and bandwidth costs still make it a potentially expensive proposition, but the level of interactivity has already moved further.

Chesebrough also acts as the Canadian representative for Los Angeles-based Diablo VPS (www.diablovps.com), a site with an award-winning online movie editor that allows users to create their own movies using available footage, images, sound effects and audio tracks, and



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Wireless 101

Every time you turn around these days, it seems someone is slinging the word "wireless" at you like it's supposed to mean something. Since the word has several meanings, following is a quick guide to the various worlds of wireless:

Cellular wireless

When you hear the word "wireless" on its own, it's probably being used to refer to cellular phone technology — especially the ability of these new devices to send and receive data (email, text messages, and even Web surfing) in addition to making voice calls. It doesn't matter whether you're using an actual cell phone or a cellular modem, because both can send and receive data. Trying to view data (Web pages or longer email messages) can be less than ideal on a tiny telephone screen, though.

Most Canadian cellular networks have been upgraded recently to "high speed," which means they can move more data faster. But high-speed, in this case, realistically means about 56 kilobits per second, roughly the same speed as the fastest dial-up connections using a telephone. There's talk of broadband connections over cellular, but it's not here quite yet.

There are two major types of high-speed cellular wireless in North America:

CDMA 1x

The Code Division Multiple Access standard is more popular in North

America than in the rest of the world, but here the networks are pretty prevalent; the 1x refers to the upgraded high-speed-capable data network. These phones come with built-in identification information, which means changing your number is a bit more complicated. Both Bell and Telus use the CDMA 1x network.

GPRS

General Packet Radio Service is more popular worldwide — especially in Asia and Europe — but it's worth noting that North American GPRS devices often use different radio frequencies and are often only partially compatible with other GPRS networks around the world. GPRS devices use a user-replaceable SIM card for identification. Activation of a phone is typically as simple as changing SIM cards, which makes changing your number extremely easy, and it allows you to share one cell phone account among several different devices. Both Rogers and Fido use a GPRS network.

Wireless networking (aka WiFi)

Popularly known as WiFi, wireless networking has had a lot of attention lately, thanks to the proliferation of "hotspots" popping up in urban areas.

WiFi networking is starting to appear as standard gear in many new notebooks (especially those using Intel's new Centrino technology) and handhelds. But even if it's not built in, adding WiFi to a computer is as easy as installing a USB, PC Card, or internal WiFi adapter. Handhelds can add WiFi using CompactFlash or SecureDigital adapters. The catch: to use WiFi, you will need a base station hooked into your office or home network, or you'll have to find a "hotspot" that is a public space with a WiFi base station.

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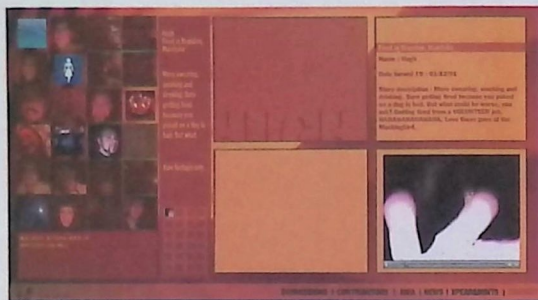
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then send them to friends as a finished package.

Support for this type of interactivity is growing quickly, and Chesebrough says Nemesis will look to enhance it even more in the next few months to make it more viable as a business-to-business application.

"Flash Video doesn't need to stop at being a produced piece of media that is intended for a specific use," Chesebrough says. "If there are no limitations, there could be implications for video that extend far beyond practical benefits immediately recognized, simply adding to the effect on a users experience online."

Hugh Elliott is a former member of the Nemesis team, and has used Flash Video extensively on his Web site When I was 19 (www.wheniwas19.com). The premise behind the site has Elliott recording people on video doing

wacky things or telling stories about themselves. He now wants to expand the content and context of the site by incorporating a Flash Video editor to allow users to post their own videos.

"Video on the Web is nothing new, but to be able to use it in an interactive setting is something that's moving in different directions," Elliott says. "Technically, if I were to go with the same theme, which is basically presenting stories I mooched off people at bars, then it would be very easy to keep the site the way it is."

But the level of interactivity with the user can also be seen through the Web site the video calls home. Flash video can trigger effects on the Web site surrounding it based on where the programmer has decided to place them.

"As a developer, you can set a flag at a certain frame, which can open up a whole new set of navigation that wasn't there before," Elliott says. "Full video control isn't all that difficult to add to a Flash video, it's just a matter of programming it in, but in most cases, you don't want users to have that kind of control because you want it to be a seamless presentation."

"We're already light years ahead of where we were five years ago."

By Ted Kritsonis

Broken Saints

Broken Saints, the Flash-animated graphic novel that attracted millions to its Web site since 2001 courtesy of Vancouver-based Budget Monks Productions, has finally hit retail on DVD.

Starting May 10, all Future Shop locations across the country (primarily in Vancouver, Toronto and Montreal) started to carry very limited quantities of the DVD for a retail price of \$39.99.

The four-disc set holds over 16 hours of content — 12 of which encompass the story alone — and has been significantly enhanced with better art, voice acting and sound effects.



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If Benjamin Franklin is to be believed, "in this world nothing can be said to be certain, except death and taxes." Intuit Canada has these two bases covered, and now that the tax portion of the equation is behind us, is focusing attention on the other part.

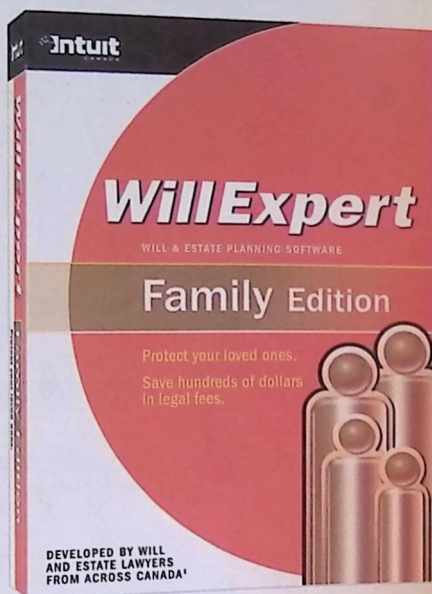
Will Expert: Family Edition is a guided will creation package designed to give two people a legally sound estate plan when it becomes needed.

Intuit points to a number of factors to be considered that can bring a will into contention. Factors like severely disabled dependants, not being a Canadian citizen, or "multiple marriages" (presumably consecutive, though simultaneous would almost certainly throw a still larger wrench in to the works) require a more specific and personalized will. In these cases, a will drafted and checked by a lawyer is the way to go.

Creating a simple will calling for an equal division of assets between two parties and charging one of those parties with guardianship of any future children took about an hour.

The vast majority of this time was spent reading. Along the way, users have the option of watching several tiny, thumbnail sized videos explaining the importance of thinking carefully before setting forth your will, or about the importance of speaking to the person named as executor of the will before committing his or her name to paper.

The will is created using an interview process and is fairly

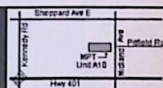


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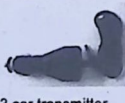
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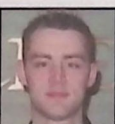
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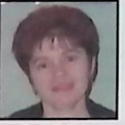
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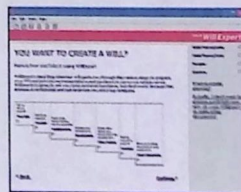
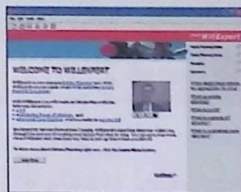
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straightforward. Explanations of the terms that crop up in the process and their implications on the will are clear and concise.

One of the benefits of using software is that the process can be completed in instalments. Rather than being forced to make snap decisions as the clock ticks and the lawyer's fees mount, users can suspend the process at any time and come back to it later. The benefit of being able to save and walk away can't be understated.

Once users are satisfied that their last wishes are safely committed to the program, they can be compiled into a PDF (Acrobat Reader) form document and printed as a final or draft copy. Once confirmed though, users can't go back and change their wills. You'll have to buy in again to do so.



Then, it's on to prepare letters to the will's Executor or the guardians of dependant children, and so on. These documents are Microsoft Word formatted templates and are edited manually as opposed to through an interview process.

For those whose marital or financial status has recently changed, those with young children or for those whose existing will is outdated, Will Expert is a simple and relatively painless way to commit legally sound last wishes to paper.

The fact that its price tag doesn't even approach one hour of lawyer's fees sweetens the deal.

Perhaps the biggest downside to Will Expert is that it serves to remind us that we're perpetually one step closer to shuffling off the mortal coil.

By Andrew Moore-Crispin

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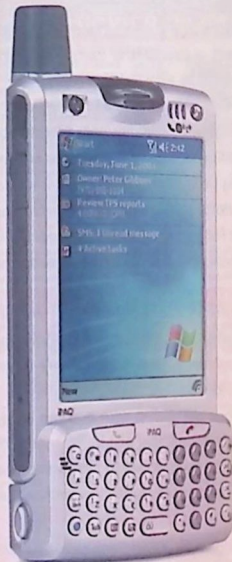
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Hit the Road: We've Got Things in Hand



A growing number of PDAs are designed to reach out and connect with the outside world, whether that means connecting to a cell phone via Bluetooth, hooking up to a hotspot via WiFi, or tapping directly into the cellular network.

There's also a growing desire to add more multimedia capabilities. New colour-screen models of the BlackBerry (like the 7290 model from Rogers or the 7250 from Telus or Bell) still feature excellent data capabilities like email, calendar and WAP browsing, and allow voice calls. The new models feature Bluetooth and come with photo display software, but still don't feature slots for memory cards, and aren't always configured for full-on web browsing.

HP's newest Canadian iPAQ models look a bit more attractive to the multimedia fanatic, with a big colour screen, integrated SecureDigital slot, quad-band GPRS cellular connectivity, 802.11b WiFi and Bluetooth onboard. The only problem is the price. At \$729 for the h6320 and \$749 for the h6325 (which has a built-in camera), that's a whole lot of cashola, even before you pay for your voice/data plans.

Telus Mobility is also bringing out a PocketPC-based smartphone, the Audiovox 6600. While the phone doesn't have integrated WiFi, it does have Bluetooth onboard, CDMA 1x voice/data connectivity, and a built-in camera. Despite the lack of WiFi, the 6600 does have a killer feature: the entire front panel of the 6600 slides upward to reveal a tiny QWERTY keyboard, making it a much nicer choice for those who are planning to use it regularly for email or the Web.

PalmOne has long been the one to beat in the handheld market, and while it's just recently launched the Treo 650 smartphone in Canada, the company is also staying on top of the PDA market too, with the launch of the Tungsten E2. It's an update of its top-selling model, the Tungsten E, and it adds Bluetooth connectivity, features a newer processor, and comes with a better display. Oddly, the E2 sports the same \$299 price tag as the older model, so if you're looking for a new organizer, skip the E and go for the E2 instead.

By Sean Carruthers

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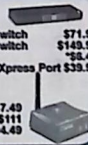


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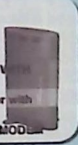
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There and back again

Travel and route planning simplified

The Global Positioning System (GPS) as we know it is more than 30 years old. Developed by the American military under the name Navstar, the system consists of 24 orbiting satellites, three of which are used at a time to pinpoint a ground receiver's position on the globe.

It's all atomic clocks and triangulation. In simpler terms, if you know where you're headed, a GPS system can help you get there.

In-car GPS systems are an increasingly available option in cars, and

after-market dedicated GPS units are likewise making headway. Though if users don't mind carrying either a laptop or PDA in the car with them there are other, less expensive options to be had. One such option is Microsoft Streets & Trips 2005, which for the first time offers a retail package with a bundled GPS receiver. For home users, a stand alone package is also available.

The small Pharos GPS receiver

plugs into a laptop via USB, and mounts to the windshield with a suction cup. We've had the chance to test a few of the company's GPS devices previously and they have performed admirably.

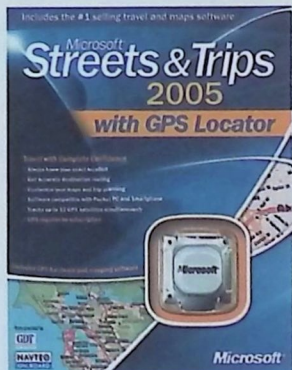
When coupled with Streets & Trips 2005's seemingly accurate maps – we haven't yet had the opportunity to drive across country to truly put it through its paces, alas – and 1.8 million points of interest, users get a powerful navigation tool for relatively little cash.

At under \$200 and with some stand alone in-car GPS systems costing closer to \$1000, potential users might forgive the fact that they have to boot up a laptop, open the program, then wait the 15 seconds or so the GPS receiver takes to get its bearings.


















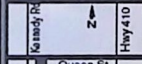
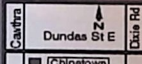
Some end-users complain via online forums about out-of-date information, suggesting that Streets & Trips' map data is more than a year old. We didn't encounter any such problems, though we didn't travel outside the Greater Toronto Area in our tests.

Using a laptop in-car is inconvenient but can bring with it some benefits. Travellers can pre-plan a route before heading out independent of the GPS receiver in Streets & Trips 2005, right down to rest areas and gas stations to stop at along the way, and restaurants to check out or hotels to check in.

While online mapping services like Mapquest (www.mapquest.ca) and the undeniably cool Google Maps (maps.google.com) with its satellite photo presentation option are handy and certainly have their use, they



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pale in comparison to dedicated mapping software suites.

By entering data like your preferred driving speed on different road types – several of which could unfortunately use some American to English translation to be understandable – users have access to some powerful tools and fairly accurate time estimates, not accounting for traffic and the like. Construction data can be updated from an online database and routes adjusted accordingly. By going a little further and researching your vehicle's fuel consumption on surface roads and highways and the average price of fuel, the software will also suggest gas stations along the route and give an estimated fuel cost for the trip.

Saved routes can be exported for use with the included Microsoft Pocket Streets 2005 mobile map software for Pocket PC, and can be printed or emailed.

With some messing around, it is possible to import data from Outlook, or presumably any software capable of outputting data to CSV, TXT or similar separated value file. This means that all contacts can be input as pushpins across the map so users can see just how far around the globe their friend ring stretches or for other, more practical purposes. In essence Streets & Trips 2005 is a powerful travel planner, whether said travel is business or pleasure. The option of a bundled GPS receiver takes it a step further, turning it in to a potentially valuable travel companion. Assuming your laptop has sufficient juice.

By Andrew Moore-Crispin

Microsoft Streets & Trips 2005 With GPS Locator

Estimated price: \$150 with GPS receiver, \$50 without

www.microsoft.com/streets

System requirements:

Pentium II or Higher processor (Pentium III recommended)

Microsoft Windows 98 SE, Windows ME/2000/XP

Microsoft Internet Explorer 5.5 or later

128MB of RAM (256MB recommended)

1GB of available hard-disk space for standard installation

(500 MB for minimum installation)

4X CD-ROM drive

Available USB port

Pros:

–Relatively inexpensive

–1.8 million "points of interest"

–Powerful route planner

Cons:

–In-car somewhat cumbersome

–Laptop required / placement difficult

–Out of date maps?



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Unlocking the Sony PSP's hidden talents

Sony's new PlayStation Portable rocks for playing videogames, but you can have fun with it in even more ways.

Out of the box, you can watch popular movies sold on the PSP's proprietary Universal Media Discs (UMDs) or listen to your favourite digital tunes.

But with a bit of tinkering, you also can use your PSP to play video clips transferred from a computer, such as home movies or music videos. Even more amazing is how you can turn Sony's portable gaming console into a wireless Web browser, email and instant-messaging device, and blog and ebook reader.

The following are step-by-step directions for "hacking" your PSP into a video player, Web browser and ebook reader.

How to play your own videos

Before you begin: To transfer camcorder footage, recorded TV shows or other video, you'll need a USB 2.0 cable and a Memory Stick. Sony includes a 32MB Stick, but consider buying a larger one because the starter Stick only has enough storage for a few minutes of video or music. You can use any USB cable to transfer data, such as one from an iPod or digital camera, or you can buy a new one at a computer or electronics store for \$10 - \$20.

Make a connection: Attach the USB cable to the PSP and your computer. From the device's main menu, scroll to Settings and then select USB Connection. Press the X button. If you're running Windows XP, you should hear a two-tone chime that tells you a new piece of hardware has been

added to the computer. Open a program such as Windows Explorer and on the left-hand side of the screen look for a new drive letter (such as G:). Click it and you'll see a directory called PSP. If you don't see a new drive letter or directory, you will need to format the Memory Stick from the System Settings menu of the PSP interface. Be careful, because this will erase saved games or other information you have on the Stick.

Tool of the trade: Download and install the free PSP Video 9 (www.pspvideo9.com) software, a handy Canadian-made video conversion tool for your Windows computer that converts video files such as AVI or WMV into MPEG-4 (.mp4) format, which your PSP can play.

Convert and move: Launch the PSP Video 9 and click Convert at the top of the screen, then click the tab that says Convert New Video. Find a clip you want to convert, such as "mom-birthday.avi," and when you click Open, it will begin to convert the file. When the conversion is finished, click the Copy tab and highlight the video you want to copy on the left-hand side of the screen. Click Copy Video to PSP near the bottom of the screen and it will begin to transfer the file over to the device.

Press play now: Disconnect the PSP, then, select the desired file on the PSP from within the Video tab. Press the X button to begin playing it. Click the triangle button while a clip is playing to tinker with the settings, such as zoom and slow motion.

How to surf the Net

Before you begin: While the PSP includes a WiFi antenna for wireless gaming over the Internet, Sony doesn't provide a browser for Web surfing or an email program for exchanging messages. However, you can turn your PSP into a mobile Internet terminal with a copy of Sony's Wipeout Pure racing game, which includes a basic browser for game downloads. You'll also need access to a wireless network. You can connect to a base station at home or use a "hot spot" at a coffee shop, hotel or library.

Create a new connection: On the PSP's main menu, go to Network Settings and select Infrastructure mode. Create a new connection and give it a name. When you're done, press Enter.

Set your network details: Highlight this new connection name and press the right direction key to view the next page, which is WLAN Settings. Under SSID, type in the name of the wireless network you're in and the encryption password, if required (e.g. a 26-character WEP security key).

Enter a DNS address: Select the Custom address setting. Leave the IP Address setting at Automatic, but for the DNS setting, select Manual. Enter a Primary DNS address of 67.171.70.72. On the next page, select Do Not Use for Proxy Server. Save your settings.

Turn your setup: Check to make sure the PSP's WiFi switch is turned on. It can be found near the analog stick on the left-hand side of the unit. Follow the instructions to test the connection and you will see your signal strength, IP address and other information.

Start browsing: First, start Wipeout Pure and head over to the Download section. Once there, select the name of the connection

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you just created. This will take you to an unofficial PSP Web site created by a student at Pittsburgh's Carnegie Mellon University. Then, use the PSP's buttons to type in a URL or enter a search query into Google, which is a link on this site. Because there is no keyboard or touch screen, it can be a little tricky to navigate the Web or check your email, but if you have patience, it's definitely doable. Because the PSP includes a USB port, keyboards that work with it probably aren't too far off.

How to read electronic books

Before you begin: Download a copy of Rarefind's Paperless Printer (www.paperlessprinter.com), a document exchange utility that is free for noncommercial uses. Install it on the hard drive of your Windows PC.

Choose a title: Download an e-book, such as free ones available at Project Gutenberg (www.gutenberg.org). Many here are available in HTML or Word document form.

Print as a picture: Double-click the ebook you downloaded, which will open a supported program, such as Internet Explorer for an HTML file or Acrobat Reader for a PDF. Click File, and then Print. You will see an option to print to the Paperless Printer. Choose it and select to save the file as a JPEG image. It will create one new JPEG file for every page in the e-book (for example, Alice's Adventures in Wonderland became 76 JPEG files, totaling 17MB in size). You may need to tweak the font size to make sure it's legible on the PSP screen.

Transfer the title: Connect your PSP to your PC (see instructions above), select USB from the PSP main menu and then drag and drop the ebook files into the Photo folder.

Take a read: Unplug the PSP and select your photos to begin reading your ebook. Use the analog stick to move around the page. You may want to press the triangle button and select the zoom option so the text will be easier to read.

By Marc Saltzman



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Road warrior: Women's totes

Designed in a range of leathers, women's totes are meant to offer a more feminine and classically stylish alternative to laptop carrying. They also happen to be the worst ergonomic choice by far given that they're designed to sit purse-like on one shoulder – and the straps are generally not padded. Still, women seem destined to endure pain as a trade-off for fashion style (just look at high heels ...)

Mobile Edge Ultra Tote

Price: about \$125 (from US\$99.99)

Size: up to 15.4"

Dimensions: 18"x14.5"x5" **Weight:** 1.5kg

Pros:

- good protection along bottom
- multiple compartments and pouches
- metal nubs on bottom to prevent scuffing

Cons:

- non-padded straps

The Ultra Tote does a pretty good job of fulfilling the role of purse replacement. In addition to offering adequate protection for a laptop with foam nodes along the bottom and a Velcro securing clasp, the tote boasts five compartments, a cell phone pouch, and a removable "cosmetics bag." The thin leather straps (reinforced by metal clasps) aren't the most comfortable, however.



Mobile Edge Ultra Tote

Targus Jayne

Price: \$59.99

Size: up to 14"

Dimensions: 13.5"x11"x4.5"

Weight: 0.9kg

Pros:

- light and compact

Cons:

- minimal protection on bottom and sides
- round, hard leather straps aren't that comfortable

The Jayne Tote is technically just a bag – there isn't a dedicated pouch for the laptop so other items in the bag can theoretically brush up against and possibly scratch it. By the same token, it also offers minimal protection on both the bottom and sides. There's no zipper or clasp to secure the laptop either. Being a small bag, the Jayne can only handle screens of up to 14" and a few accessories – there are pouches



Targus Jayne

for pens, cards and a cell phone – which is good because the round, hard leather straps would make carrying anything heavier quite uncomfortable.

Samsonite Park Avenue Nylon Tote

Price: \$90

Size: up to 15.4" (adjustable)

Dimensions: 17"x13"x6"

Weight: 1kg

Pros:

- adjustable wall to accommodate notebooks of various sizes so they fit snugly

Cons:

- thin, non-padded leather straps

The Park Avenue tote houses a laptop in a pouch surrounded by thin, hard foam on the bottom and sides and a foldover flap secured by a metal clasp. The wall is adjustable to fit several sizes of laptop snugly. The laptop compartment only takes up roughly one third of the bag, leaving plenty of room for other stuff. Like the other bags tested, the thin leather straps aren't the most comfortable.



Samsonite Park Avenue Nylon Tote

By Erin Bell

Epson Powerlite S3 projector

Epson Canada just announced availability of the latest addition to its line of multimedia projectors, the Powerlite S3.

The projector includes features not generally available on projectors in its range, Epson says, including pre-programmed optimized colour modes for presentation, home theatre and gaming applications as well as a photo mode that enhances black and white levels to bring out detail in over- and under-exposed images.

The user-replaceable 135 watt, \$250 lamp throws 1,600 lumens and is rated for 3,000 hours, the company says.

At \$1,200, Epson suggests its S3 Multimedia Projector using 3LCD pro-

jection technology is well suited to home theatre, gaming and of course, office use.



With an SVGA native resolution [800x600] and capable of displaying a 60-inch image from 5.9 ft., the Powerlite S3 is well positioned as an entry-level projector.

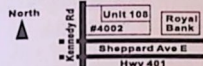
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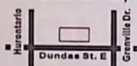
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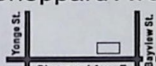
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Other features include a cord wrap to keep the attached cords neat, built-in circuit protection, and automatic shut down in cars to prevent the car battery from draining.



White Collar Slacker's Handbook: Tech Tricks to Fool Your Boss

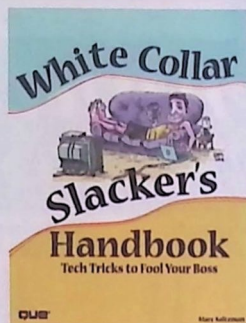
While we here at HUB can't personally relate, being the model workers we are, Contributing Editor Marc Saltzman's latest book hit shelves recently giving readers all manner of tips, tricks and diversionary tactics with which to pass the proverbial buck.

The White Collar Slacker's Handbook: Tech Tricks to Fool Your Boss is Saltzman's guide to getting your own back using email, cell phone, PC and other technology that keeps us tied to the office 24/7.

Ironically, readers may actually learn some valuable skills in the process, like how to set up a remote desktop connection to maintain a link back to the office or to connect with a colleague across country.

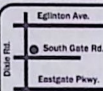
The latter part of the book deals with office levity detailing tech-related practical jokes you can pull on coworkers, the best sites for killing a few hours on a Thursday afternoon, Web-based games and of course, a way to clear them all from the screen immediately should the boss walk by.

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Sony Ericsson S710a camera phone

Sony Ericsson and Rogers Wireless just announced the Canadian availability of the S710a handset.

The phone incorporates a 1.3 megapixel camera, MP3 player, expandable memory and basic organizer functions and is tri-band (850/1800/1900 MHz). It is available only through Rogers in Canada.

A 32MB Memory Stick Duo card and adapter come bundled with the phone with support for up to 128MB of this particular flavour of Sony's proprietary storage media.

The S710a's camera application uses an interface similar to that of Sony's digital cameras, making it simple to use, the company says. Currently available and carrying a price tag of \$650 without service provider relief, the S710a is a Rogers exclusive handset. If users are prepared to sign a three-year contract, the phone can be had for \$500.





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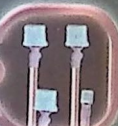
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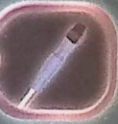
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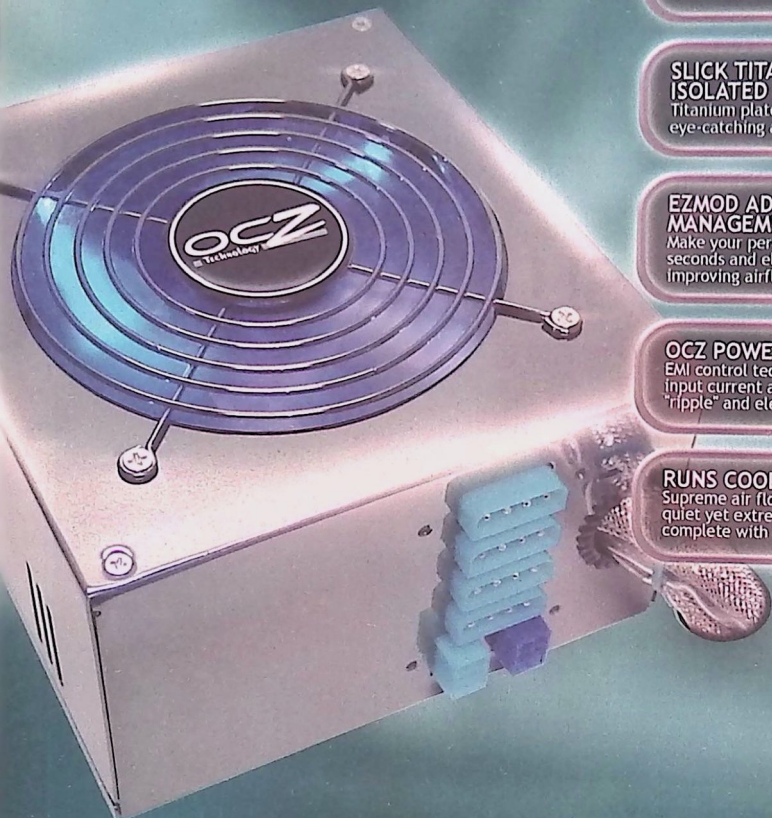
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HUB @ E3: The Canadian contingent

Canadian game-makers and publishers made their presence felt at the Electronic Entertainment Expo in Los Angeles, where more than 5,000 computer and video game products were on display. Here's a summary of what Canadian developers and publishers had to offer on the show floor.

The Hulk: Ultimate Destruction

In this follow-up to 2003's *Hulk*, Vancouver-based Radical Entertainment has abandoned the alternating stealth levels that featured the puny Bruce Banner in favour of an all-Hulk destructathon pitting the green behemoth against ... well, anything unfortunate enough to get in his way.

"The Incredible Hulk is the strongest super hero there is, so we wanted to capitalize on that.

This guy's just a towering mass of destruction as he walks around," explained lead programmer Ben Geisler who was on-hand to walk us through a demo.

As the Hulk runs, cars



Canada paves the way for adventure games

On the publishing side, Toronto-based DreamCatcher Interactive, the leading North American publisher of adventure games, was showing off a slew of upcoming point-and-click titles for PC. Two in particular caught our eye:

In *Cold War*, set in 1985, you play a reporter who travels to Moscow on a story tip and uncovers a plot to assassinate the Soviet president in an attempt to bring back communism. The game features third-person stealth action using a variety of neat gadgets including an X-ray camera, and the ability to assemble parts into various items by collecting blueprints. Developed by Polish studio Mindware, *Cold War* is slated for release in September, 2005.

And *Then There Were None* is an adaptation of the classic novel by mystery writer Agatha Christie. In the book, ten people visit an island and start to get killed off one by one. In the game, you play an eleventh character, the boatman who brought the visitors to the island. Your goal is to discover who the murderer is before you get murdered yourself. The game features multiple endings; as a special bonus, the actual ending of the book has been scripted and rendered as a cutscene. Lee Sheldon, writer for *Murder She Wrote*, served as game designer and writer for the project. The release date is Winter 2005.

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crush underneath him and telephone poles give way. Scaling buildings is as simple as running up them, and the Hulk can jump whole city blocks. The game uses the studio's own specially-developed physics engine, which features a number of cool tricks including what the team refers to as "weaponization" – the turning of any part of the environment into a weapon, including vehicles.

The Hulk can punch up a bus, then pick up and run with the crumpled shell. Or, turn it into a skateboard. Also in the demo, the Hulk tore a police car in half and used the halves as steel boxing gloves on either hand.

Where the movie was serious, explained Geisler, the game (which has no ties to the movie whatsoever) was an attempt to bring back some of the campy humour of the comic books.

Published by Vivendi Universal, expect the game in Summer 2005 for PlayStation 2, Xbox and GameCube.



Scarface: The World Is Yours

Radical was also showing off Scarface, a game based on the 1983 classic movie that starred Al Pacino as Tony Montana, the Cuban-born immigrant

who takes over a Miami drug empire but whose violent lifestyle eventually catches up with him.

The first scene of the game recreates the climactic shoot-out of the movie, during which Montana is killed by the bullets of assassins sent by rival boss Alejandro Sosa. In the game, however, Montana manages to escape by shooting his way out. With his drug empire ruined, the premise of Scarface the game becomes for Montana to slowly rebuild his reputation in the crime world and ultimately seek revenge against Sosa.

Scarface owes a lot to Grand Theft Auto, including its free-roaming urban environments, the ability to steal any vehicle, in-car radio stations with more than 100 songs from the 1980s, and the evolution of Montana from petty thug to big-time crime boss.

During combat, the left thumbstick can be used to target specific body parts (like the head, kidneys and arms), though since most enemies seemed to go down in one or two shots, this didn't seem to contribute a whole lot to the gameplay in the demo we observed.

The game is currently about 60 per cent done and scheduled for a 2006 release on PlayStation 2, Xbox, PC and next-generation Xbox 360.



Prince of Persia: Kindred Blades

In the tentatively titled third instalment of the critically-acclaimed Prince of Persia franchise developed by Ubisoft Montreal, the Prince returns from the Island of Time to find his homeland of Babylon ravaged by war. The game takes place in the labyrinthine streets and rooftops of Babylon, where the Prince is hunted as a fugitive by the city's citizens, who no longer seem to recognize him. The Prince's familiar acrobatics are merged with an expanded free-form fighting system and new stealth elements reminiscent of Splinter Cell, which opens up a host of "quick kill" possibilities a la Sam Fisher, such as throat-cutting from behind or choking an enemy while hanging upside down from a ladder.

Players control the Prince as well as a strange alter-ego known as the "Dark Prince", a dangerous byproduct created by the Prince's constant dabbling in the Sands of Time.

Prince of Persia is scheduled for a Winter 2005 release on Xbox, PlayStation 2, GameCube and PC.

By Erin Bell

Quickies

Relic Entertainment from Vancouver had two World War II-themed games on display, both published by THQ. Company of Heroes, a real-time strategy game for PC with a release date of 2006, features squad-based fighting beginning with the invasion of Normandy and continuing with the Allied push into Europe. The Outfit combines real-time strategy elements with action gameplay and a fictional story set in a WWII backdrop. It's scheduled for a Winter 2005 release on Xbox 360.

EA Canada was showing off one of the few playable Xbox 360 titles on the show floor: Need for Speed Most Wanted. Like previous Need for Speed games, the goal is to become the best street racer around by winning against other racers in urban environments while simultaneously avoiding the pursuing cops. Gear shifting, acceleration, breaking, and the nitrous boost are all straightforward and the graphics demonstrated the awesome level of detail to be expected in a next-generation system.

Kept carefully under wraps until E3, Bully was finally unveiled as the debut title from Rockstar Vancouver (formerly known as Barking Dog Studios). Featuring the trademark open-ended gameplay of Grand Theft Auto, the setting this time is not an urban jungle but a jungle of a different kind: the school playground. The game takes place in the fictional Bullworth Academy reform school, where you play a schoolboy undergoing the daily trials and tribulations of school life, including standing up to bullies, getting picked on by teachers, playing pranks and pursuing the girl. The game comes out in October 2005 for PlayStation 2 and Xbox.

Although they weren't showing anything on the show floor, HUB got a chance to chat with the four founders of Buena Vista's new Vancouver-based development studio, Propaganda Games. Daryl Anselmo, Josh Holmes, Jorge Freitas and Howard Donaldson are all former Electronic Arts employees who worked on the NBA Live franchise and co-created NBA Street and Def Jam before founding Propaganda games in January, 2005. For its first game, the studio (which in four months has expanded from 30 to 70 people) is resurrecting the Turok shooter franchise for Xbox 360 and PlayStation 3.

HUB @ E3: Talking 'bout a Revolution

Leading up to this year's E3, there was some ill conceived speculation that Nintendo might bow out of the console manufacturing race.

Not likely, as Nintendo President Satoru Iwata proved on the stage of Nintendo's pre-E3 press conference.

While Microsoft had some playable behind closed doors Xbox 360 games and both Sony and Microsoft had some varying impressive in-game and pre-rendered next-gen footage, Nintendo satisfied itself to explain the core concepts behind its next console, designed under the name Revolution.

Nintendo has always done things a little differently from the rest of the game console industry at large. While Microsoft and Sony each attempt to create the next hardware revolution with their consoles and to varying degrees, the next major networked home entertainment appliance, Nintendo is planning a Revolution of its own.

Its next console isn't going to be about tech specs, hardcore gaming subsets or online muscle flex, according to Nintendo of Canada marketing manager David Le.

"What we try to do is bring games to the market. We're all about changing experiences and how they play games versus trying to bring them to market for any other reason," says Le.

The Revolution will be capable of delivering games from Nintendo systems past (from the 8-bit Nintendo Entertainment System to the N64) online and will be backwards compatible with GameCube discs. Also, in keeping with a growing wireless controller trend that Nintendo arguably perfected with the WaveBird, Revolution controllers will indeed be wireless.

While in the current generation, Nintendo has been hesitant to dive into online, Revolution's strategy is based in part on the "Nintendo WiFi Connection."

Where in the current generation, a hardcore subset of gamers (10 per cent of Microsoft's current 20 million install base, for example) play online, Nintendo envisions an online experience that will bring more.



"It's about bringing people together to play games by removing a lot of barriers in terms of cost and, as Reggie (Fils-Aime, Nintendo of America's executive vice president of sales and marketing) calls it, the Machismo attitude around online," says Le.

"If you remove those barriers in terms of cost and intimidation, our expectation is that it's not five or 10 per cent that are going to be online with us, it's the vast majority of gamers."

Nintendo's handheld gaming legacy is likewise a large part of its strategy as explained on the E3 show floor. The Nintendo DS with its in-built wireless internet capabilities will start to be put to use. Up to this point, it has only been used to connect gamers locally.

Game Boy Micro

A shrunk down Game Boy Advance complete with customizable face plates and a smaller but much brighter screen was Nintendo's hardware announcement for E3. While a little underwhelming in the greater scheme of this year's show, the Micro shrinks the popular handheld to truly pocket-sized proportions.

No bigger than your standard cell phone handset, the Micro is aiming itself at a more image-conscious breed of gamer.

By Andrew Moore-Crispin

Nintendogs

It's already a proven DS system seller in Japan, and the hard to classify but instantly addictive Nintendogs game will be coming to North American shores sometime this year.

Players select and raise a puppy, teaching it tricks, rewarding and playing with it, giving voice commands and petting it using the stylus and the DS' lower touch-sensitive screen.

"Bark Mode," a wireless local connection mode, allows your Nintendog to alert you when another is in the area. Then, the two Nintendogs can play together and gamers can trade supplies and toys and, potentially, make a real-world connection with other players.

Mario Kart DS

Mario et al are finally driving onto the DS in the fourth quarter of this year.

With a wireless online game mode and wireless local play, up to eight gamers can join up for the classic frenetic racing and obstacle / projectile hurling that makes the long running franchise great.

The Legend of Zelda: Twilight Princess

The umpteenth instalment of this by most accounts (this writer's included) excellent franchise brings us a slightly darker tale and a more mature Link. Director Eiji Aonuma points out that the game isn't dark for darkness' sake but rather to create a more engaging and visceral experience for gamers.

Not everyone approved of the cartoonish graphics in The Legend of Zelda: The Wind Waker and while this newest game was built on the same Wind Waker game engine, said engine has gone through innumerable tweaks and improvements, Mr. Aonuma says.

For more information from Nintendo's limited access Developer Showcase event held the day before the show, check the Total Gamer page on www.hubcanada.com.



HUB @ E3: Centre of the circle?

Microsoft pulled off something of a coup in this generation of videogames from what was regarded by some as a questionable business decision to enter the home console gaming market to the biggest day in entertainment history: the second instalment of Microsoft Game Studios' Halo franchise pulled in US\$125 million in its first 24 hours at retail, topping all other games and movies in the process.

The Home and Entertainment division of the Microsoft mega corporation that encompasses Xbox has yet to become consistently profitable, however. Robbie Bach, chief Xbox officer (CXO?) and senior vice president, home and entertainment division says the company has announced it will be profitable come end of its fiscal year in June 2007.

This generation [which is already being referred to as "last generation" by some Xbox reps off the show floor] gained market share in homes by coming to market with the most powerful hardware. "It was smart but unbelievably expensive," says Bach. Videogame consoles are generally

sold as loss-leaders with the money made in software and licensing fees.

Xbox had little new to report of its Xbox 360 at its pre-E3 press conference with a few details leaked before a press embargo was lifted and many more officially announced in a vapid MTV special.

Bach talked of plans to build the videogame industry to one billion consumers in the next generation in an interview away from the din of the E3 show floor. He explained that one billion gamers is about half the current assumed number [assuming 2.5 people per game console] and is an industry-wide figure as opposed to an Xbox 360 specific goal. "I'll smile and say 'we just want our fair share,'" Bach said. When asked for clarification of what exactly a fair share might be, he continued "whatever it takes to beat Sony." This translates to the mid to high 40s in per cent terms, discounting handheld gamers and assuming current trends continue.

J Allard, corporate vice president and chief XNA (the Xbox development platform) architect spoke of plans for an online commerce model where those not generally considered a part of the core gaming demographic of 18 - 34 year-old males can participate in an online game experience by selling, for example, independently designed character t-shirts or skate parks for Tony Hawk's Pro Skater titles.

In an interview off the show floor, Allard also raised the possibility of Xbox Live online competitions sponsored by outside companies where spectators watch the best players compete for prizes.

Features like online music downloads, integration with Windows computers and interface with portable audio players, digital cameras and presumably other USB devices sweeten the deal for non-traditional gamers.

Showing off Gears of War, a gorgeous horror shooter, EA's Need for Speed Most Wanted, Ubisoft's Ghost Recon 3 among others and with 25 - 30 titles in development for the console's "launch window" (presumably, the few months following the expected November release), Peter Moore, corporate vice president, worldwide marketing and publishing assures us that the Xbox 360 is still all about the games.

At the pre-E3 press conference, Bach announced that the Xbox 360 will be compatible with "the most popular Xbox games." As it turns out, playing Xbox games on the 360 will be software based, presumably with some sort of emulation. What constitutes the "most popular" games, when they'll be playable and if there will be a cost associated has yet to be revealed.

By Andrew Moore-Crispin

For the fact sheet and detailed system specs, check out www.xbox.com/en-CA/xbox360/factsheet



Perfect Dark Zero

Perfect Dark won gamers' acclaim on Nintendo's N64 console. Originally announced as a current Xbox title, the next instalment will instead appear exclusively on the Xbox 360.

Rare was only showing the multiplayer aspects of the game at this year's E3 but what was seen was sweet, even running as alpha code on underpowered early developer seed machines, ironically, two specially configured Power Mac G5 machines.

Expect Perfect Dark Zero to be available at the Xbox 360 launch.

Kameo: Elements of Power



Another expected launch title, Kameo is the exception to the various shooting, fighting and racing games that seemed to make up the bulk of the next-gen announcements.

The game's title character can morph into

different forms which will likely be incorporated into the puzzle, platform jumping and story progression that are the staple of a good action adventure. With Rare at the helm, the potential for greatness is certainly there and the graphic fidelity we saw even back in mid March was truly next gen.

HUB @ E3: Enter the Cell

Though the PlayStation 3 was not playable at the Electronic Entertainment Expo like Microsoft's Xbox 360 was, its presence still loomed large. In a press conference the day before the show, Sony announced a Spring 2006 release date, rattled off an impressive list of tech specs and features, and showed off some demos that gave a taste of the power of its next-generation console.

Whereas Microsoft's Xbox had been the dominant console in terms of technical prowess in this generation, the next generation is gearing up to be a battle between two super computers.

The PlayStation 3 will use a 128-bit graphics processor developed in a partnership with graphics card powerhouse NVIDIA. The result, according to NVIDIA's president and CEO Jen-Hsun Huang, who spoke at Sony's press conference, will be a GPU that combines the high-quality graphics of movies with the quick frame rates of videogames. It will use the cinematic technique of "shading" using advanced light and shadow effects as opposed to the texture mapping used by current-generation con-

soles, where a graphical decal is rendered onto a 3D object.

"We want to articulate the difference between gold paint and gold," said Huang. Using the new technology, he predicted, games could show subtle textures like brushed aluminum, silk and felt in minute detail.

The power of the GPU was demonstrated by several tech demos, including one based on Electronic Arts' boxing title *Fight Night Round 3*, which showed sweat dripping down the back of the boxer's neck, the pores and stubble on his cheeks, and fluid facial expressions from intense anger when about to deliver a punch, to shocked hurt after being clocked.

Equally significant is the PlayStation 3's 3.2GHz "Cell" CPU, whose considerable computational power is capable of rendering hundreds of thousands of objects in real-time. This was demonstrated in one demo as swirling leaves, each individual leaf rustling independently in digital surround sound, and in another as a virtual rendering of the city of London with bustling pedestrians (each with unique facial features - no cloning), traffic, and dynamic lighting and shading effects.

Other announced features include a detachable 2.5 HDD slot for storage, six USB 2.0 ports, memory stick, SD card and compact flash slots, Bluetooth for up to seven wireless controllers simultaneously, built-in 802.11 b/g WiFi and Gigabit Ethernet.

The PS3 will support blue-ray disc technology, which has 54GB of dual layer storage (six times the capacity of current dual layer DVDs), and will also be able to play DVDs and CDs. It will also be backwards compatible with both original PlayStation and PlayStation 2 games, giving it a ready-made library of more than 13,000 titles.

By Erin Bell

For the fact sheet and detailed system specs, check out www.us.playstation.com/Pressreleases.aspx?id=279

PlayStation 2

With the launch of the PlayStation 3 still roughly a year away, the PlayStation 2 still has a lot of life left in it, as was demonstrated by the number of PS2 titles on the show floor.

Sly Cooper 3: Honor Among Thieves

Publisher: SCEA Developer: Sucker Punch Productions

Expected launch date: Fall 2005

Continuing the comic book style graphics and solid platform gameplay of the first two titles, *Sly 3* continues the adventures of Sly Cooper and his partners in crime Bentley and Murray in a story that continues from where the second one left off. The new game features additional playable characters including Inspector Carmelita Fox and Lounge Lizard Dimitri, and cooperative missions in a split-screen multiplayer mode. In the coolest gimmick of all, players will be able to replay sections of the game in 3D using an included pair of 3D glasses to experience the same levels in from a unique perspective of added depth perception.

Road to Sunday

Publisher: SCEA Developer: Red Zone Interactive

Expected launch date: Winter 2005

A unique spin on the sports game genre, *Road to Sunday* blends football with off-field action and a fleshed-out storyline. Sports mogul Blake Doogan inherits a professional football team only to find that the team comes with enormous debts payable to a Jamaican kingpin. Doogan's task is to take the seven players on his team to the championship and win enough money to pay off his debts.

Gameplay takes place both on and off the field; in the off-field portion, players navigate a seedy underworld where they can compete in fighting tournaments, gambling, and rhythm-based workouts to improve player stats.



HUB @ E3: The future of gaming?

Oblivion demonstrates next generation technology

With the launch of any new console comes the list of hardware specs meant to show off the processing power and graphical prowess of this latest jump in technology. Terms like teraFLOPS, GHz, DRAM and gigasamples are being tossed around liberally, generally the higher the number preceding them the better.

HUB was privy to a behind the scenes E3 sneak peak of the next-generation role-playing game *The Elder Scrolls IV: Oblivion* from Bethesda Softworks [announced as a launch title for Xbox 360], which demonstrated more dramatically than any tech spec sheet just exactly how next generation consoles could impact the gameplay experience.

One of the ways is forests.

"We've always wanted to have big, lush forests in the game, but it's something we just couldn't do in the previous generation," explained Oblivion's Executive Producer Todd Howard. "Forests are part of so many great fantasy settings that you think about, read about, see in movies, and it's also one of the most difficult things you could do in a game. But we like trying the crazy stuff."

In development since 2002, Oblivion continues the Elder Scrolls tradition of having a vast, open-ended world full of side-quests and secrets that the player can discover at his or her own pace. The game takes place in Cyradil, capital province of the land of Tamriel, which, for the first time, is almost half covered in forests – forests with deer to be hunted, mushrooms to be picked, and whose foliage animates in real

time based on weather. Oblivion's programmers spent some time in the University of Maryland's geology lab studying how soil erodes, rocks form and trees grow, allowing them to grow the forests in-game.

In addition, there are nine major cities and many smaller settlements. The game contains more than 9,000 objects to pick up and play with, and more than 200 dungeons all crafted by hand (as opposed to randomly generated.)

Another benefit of next-generation technology is in the increased sophistication and believability of NPCs. Character models and dialogue trees in previous Elder Scrolls games were limited, so that in the course of walking from one end of town to the other you'd meet the "same" people over and over again. Not so with *The Elder Scrolls IV*.

Oblivion boasts more than 1,000 unique NPCs and more than 50 hours of recorded dialogue, all lip synched. (In fact, voice data alone takes up half the space on the DVD.) Furthermore, the NPCs have what Howard refers to as "radiant AI," meaning they have each been programmed with certain behavioral patterns, goals, jobs and stats, and then left to interact with each other according to how the AI dictates, as opposed to following scripted paths.

All of these NPCs follow daily routines on a continuous 24-hour clock. For example, a merchant will get up in the morning, go to work, perhaps spend a few hours at the tavern after closing time, go home, eat dinner and go to sleep then wake up the next day and do it all over again. Multiply this by every NPC in the game, and you start to get an inkling of how rich the world hopes to be.

In the demo, we watched as a woman invited us into her room and began to practice her archery – rather dismally. Getting frustrated, she quaffed a potion to improve her archery stat, then decided to feed her dog a piece of meat, at which point the dog's AI kicked in and caused the dog to sense the presence of the meat and eat it.

The NPCs will also have conversations with each other, and listening to these conversations open up new topics to talk about and are a good way to get quests. You can persuade NPCs during conversation by using several techniques including bullying and joking, and can tell by the NPC's facial expression which approach is most likely to work.

The increased depth and attention to detail is also evident in combat, which is a much more kinetic experience than in past games. Now, instead of randomly jabbing and hoping for the correct set of numerical conditions to be met to score a hit, you must now physically connect with your target, who can in turn block and duck.

When a bow is equipped, a quiver of arrows appears on the character's back. When an arrow is used, it disappears from the quiver and actually lodges into the target object (which can be anything from a bucket to flesh), and can be manually retrieved and put back into the quiver.

It's a developer's dream come true to be able to fully realize a creative vision without having to conform to the technical limitations of a particular console. If Oblivion is any indication, the Xbox 360 and PlayStation 3 (both of which have been described as having near "super computer" levels of power) have the potential to realize any idea a developer has, even if that idea is something as outlandish as a forest.

By Erin Bell



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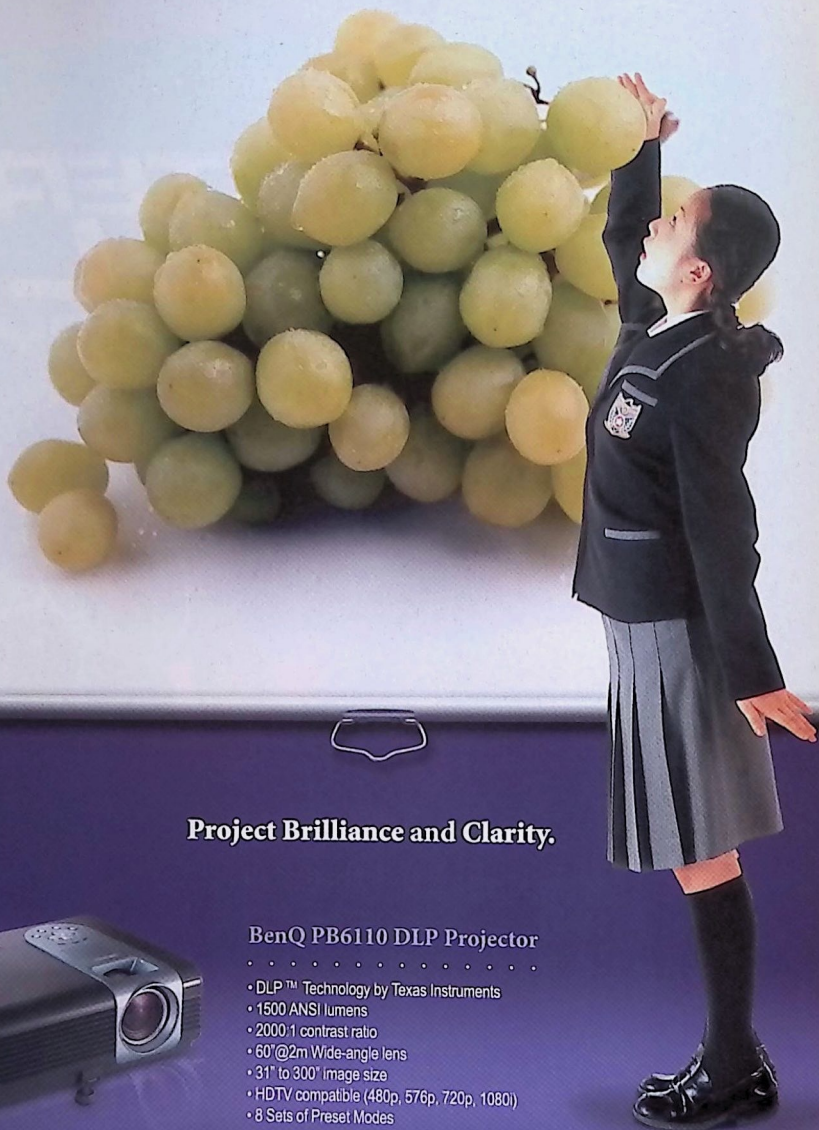
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